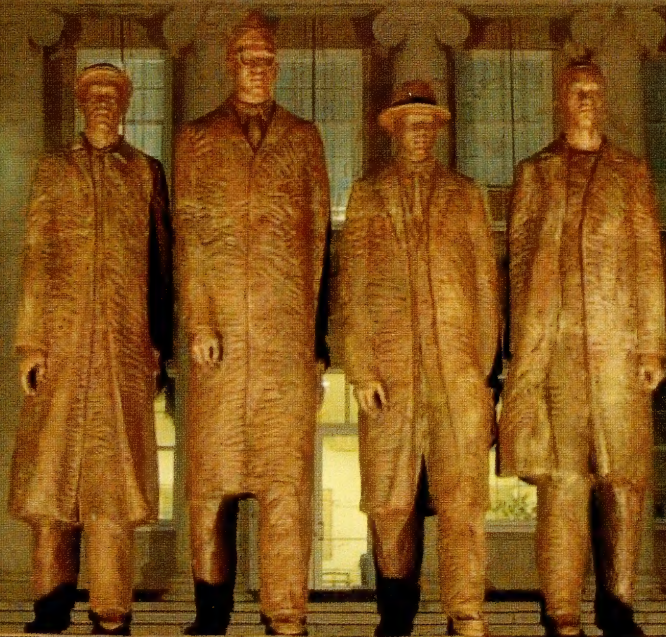


# 2003 - 2005 Undergraduate Bulletin



David Richmond    Franklin McCain    Ezell Blair, Jr.    Joseph McNeil  
(Othello Kharan)

## FEBRUARY ONE

These four A & T freshmen envisioned and carried out the lunch counter sit-in of February 1, 1960, in downtown Greensboro. Their courageous act against social injustice inspired similar protests across the nation and is remembered as a defining moment in the struggle for civil rights.

# North Carolina Agricultural and Technical State University

Photo by: Charles E. Watkins, Photographer



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# **BULLETIN OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY**

**Vol. 87, No. I**

**July 2003**

**BULLETIN OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY  
NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY  
1601 East Market Street, Greensboro, North Carolina 27411**

This Bulletin is also available on the world wide web at  
**[www.ncat.edu/bulletin/](http://www.ncat.edu/bulletin/)**

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**Bulletin  
of  
NORTH CAROLINA  
AGRICULTURAL AND TECHNICAL  
STATE UNIVERSITY  
GREENSBORO, NORTH CAROLINA  
UNDERGRADUATE PROGRAMS  
2003 – 2005**

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## TABLE OF CONTENTS

University Calendars: 2003 – 2004 and 2004 – 2005 .....	VI-XIII
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### GENERAL INFORMATION

Historical Statement .....	1
Mission, Purpose and Goals of the University .....	2
Policy Governing Programs and Course Offerings .....	3
Nondiscrimination Policy and Integration Statement .....	3
The University of North Carolina .....	4
Organization of the University .....	5
Governance of North Carolina Agricultural and Technical State University .....	5
North Carolina Agricultural and Technical State University Board of Trustees .....	6
Officers of Administration of North Carolina Agricultural and Technical State University .....	6
Location of the University .....	8
Facilities .....	8
College, Schools and Divisions .....	10
Accreditation and Institutional Memberships .....	10
The Office of International Programs .....	12
The Honors Program .....	12
Academic Degree Programs .....	13
Ferdinand D. Bluford Library .....	17
Educational Support Centers .....	17
Office of Continuing Studies and Summer Sessions .....	17
The Center for Distance Learning .....	18
Information Technology Services .....	18
The Center for Student Success .....	21
Waste Management Institute .....	21
Piedmont Independent College Association of North Carolina .....	21
The Division of Development and University Relations .....	21
Division of Research .....	22
Auxiliary Services .....	22
Bookstore .....	22
AggieONEcard .....	23
Aggie C-Store .....	23
Ticket Office .....	23

### STUDENT LIFE

Student Development Services .....	24
Counseling Services .....	24
Health Services .....	25
Drug and Alcohol Education Policy .....	26
Food Services .....	31
Housing and Residence Life .....	31
Memorial Union .....	31
Student Organizations and Activities .....	32
Aggie Pride Compact .....	32
Student Conduct .....	33

Computer Use Policy Statement .....	33
Veteran Affairs .....	33
Disability Support Services .....	34
Office of Career Services .....	34
Minority Student Affairs .....	36
Office of International Students and Scholars .....	37

## **TUITION AND FEES AND FINANCIAL AID**

General Information .....	39
Required Deposits, Charges and Fees .....	40
Audit of Courses .....	42
Registration for Thesis Courses .....	42
Refunds and Repayments for Withdrawals .....	43
Withdrawal from Courses .....	44
Student Financial Aid .....	48

## **ADMISSIONS**

Policy .....	58
Procedures .....	58
Admission Criteria .....	59
Admission-Freshman .....	59
Admission-Transfer .....	60
Admission-Special Students .....	61
Admission-International Students .....	61
Regulations for Veterans and Children of Deceased and Disabled Veterans .....	62
Admission-Graduate School .....	63
Admission-Continuing Education .....	63
Residence Status for Tuition Purposes .....	63

## **ACADEMIC INFORMATION AND REGULATIONS**

Advanced Placement .....	66
Courses of Study .....	68
Declaration of Major .....	68
Registration .....	68
Official Registration .....	68
Late Registration .....	68
Auditors .....	68
Course Load .....	68
Double Major .....	69
Prerequisites .....	69
Repetition of Courses .....	69
Core Requirements of the University .....	69
Course Credit by Examination .....	71
Grading System .....	71
Normal Credit Load .....	71
Academic Good Standing .....	72
Academic Warning .....	72
Academic Probation/Suspension .....	72
Academic Dismissal Appeals .....	73
Veterans and Persons Eligible for Veterans Benefits .....	73



Quality Points .....	74
Grade Point Average .....	74
Course Number and Classification .....	74
Course Scheduling .....	74
Classification of Students .....	74
Change of Grade .....	74
Grade Appeal .....	74
Changes in Schedule .....	75
Changing Schools/Colleges .....	75
Withdrawal from the University .....	75
Re-Admission of Former Students .....	75
Five Year Readmission Policy .....	76
Incompletes .....	76
Semester Examinations .....	76
Honor Roll .....	76
Class Attendance Policy .....	77
Policy on Make-Up of Required Course Work .....	77
General Requirements for Graduation .....	78
Graduating with Honors .....	79
Commencement Participation .....	79
Graduating Under a Given Catalogue .....	79
Second Baccalaureate Degree .....	79
Grade Reports .....	80
Privacy of Student Records .....	80
Access to Student Records .....	80
Change of Name and Address .....	81
Transcripts of Records .....	81
Indebtedness to the University .....	81
Plan to Improve Graduation Rates .....	81
Academic Dishonesty Policy .....	82
Student Appeals on Academic Dishonesty .....	83
Disruptive Behavior in the Classroom .....	83
SCHOOL OF AGRICULTURE AND ENVIRONMENTAL SCIENCES .....	85
COLLEGE OF ARTS AND SCIENCES .....	146
SCHOOL OF BUSINESS AND ECONOMICS .....	322
SCHOOL OF EDUCATION .....	364
SCHOOL OF TECHNOLOGY .....	398
COLLEGE OF ENGINEERING .....	439
SCHOOL OF NURSING .....	514
THE CENTER FOR STUDENT SUCCESS .....	527
DEPARTMENT OF MILITARY SCIENCE .....	529
DEPARTMENT OF AEROSPACE STUDIES .....	534
WASTE MANAGEMENT INSTITUTE .....	539
THE GRADUATE SCHOOL .....	540
DIRECTORY OF FACULTY – F. D. BLUFORD LIBRARY .....	544
INDEX .....	546

# NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

## 2003 – 2005 UNIVERSITY ACADEMIC CALENDAR

### FALL SEMESTER 2003

August 1 – Friday	Tuition, Fees, Room and Board due (Includes tuition waivers)
August 10 – Sunday	New Students in Residence Hall Report (Residence Halls open 9:00 a.m.-3:00 p.m.)
	Orientation for New Students (Freshmen, Transfer, Special, etc.)
	Testing for Designated Populations
August 11 – Monday	Faculty Institute – Faculty Report
August 12 – 14 Tues.-Thurs.	Orientation, Advisement and Registration for New Students
August 14 – Thursday	CONTINUING STUDENTS REPORT (Open 9:00 a.m. – 3:00 p.m.)
	REGISTRATION FOR CONTINUING STUDENTS
	GRADUATE STUDENT ORIENTATION
August 15 – Friday	Orientation Ends (Undergraduate)
August 18 – Monday	CLASSES BEGIN
	LATE REGISTRATION BEGINS (\$20.00 late fee)
August 21 – Thursday	Deadline For PBS Certification Admission Applications
August 22 – Friday	LAST DAY TO ADD or AUDIT A COURSE
	LAST DAY TO DROP AND RECEIVE FINANCIAL CREDIT
	LAST DAY TO APPLY FOR FALL GRADUATION
	LATE REGISTRATION ENDS
	LAST DAY TO RECEIVE BOOK ALLOWANCE
	Graduate Students deadline to apply for Fall graduation
	Graduate Students submit Final Comprehensive Exam Application
September 1 – Monday	UNIVERSITY HOLIDAY (Labor Day)
September 12 – Friday	Grade Evaluation for Student Athletes
TBA	UNIVERSITY DAY
September 25 – Thursday	Deadline to remove Incomplete(s) received Spring and Summer 2003
October 10 – Friday	Mid-term grades due
October 13 – 14 Mon.-Tues.	FALL BREAK
October 19 – Saturday	Fall Open House for Transfer/Adult Students
October 23 – Thursday	FOUNDER'S DAY (Classes are suspended from 3:00 p.m. - 5:00 pm)
October 25 – Saturday	HOMECOMING
October 27 – Monday	Final Comprehensive Exam Week (Graduate Students)
October 27 – Monday	LAST DAY TO DROP A COURSE WITHOUT GRADE EVALUATION
October 30 – Thursday	Deadline to apply for Waste Management Certificates
	Deadline to apply for Certificate in Entrepreneurship
November 3 – Monday	Deadline for Graduate/Doctoral/International admission applications for Spring 2004
TBA	Family Weekend/Fall Open House for high school juniors and seniors (Bethune Cookman Game)
November 3 – 12 Mon.-Wed.	ADVISEMENT AND REGISTRATION
November 6 – Thursday	Grade Evaluation for Student Athletes
	LAST DAY TO WITHDRAW FROM THE UNIVERSITY WITHOUT GRADE EVALUATION



November 7 – Friday	Last day to defend Thesis/Dissertation
November 10 – Monday	Defended and approved Thesis/Dissertation due in Graduate School Office
November 26 – Wednesday	THANKSGIVING HOLIDAY (Begins at 1:00 p.m.)
December 1 – Monday	Applications for Spring semester admission to the University are due THANKSGIVING HOLIDAY ends at 7:00 a.m. Thesis/Dissertation print copies for binding due in Graduate School Office
December 5 – Friday	CLASSES END
December 6 – Saturday	READING DAY
December 8 – 12 Mon. - Fri.	FINAL EXAMS
December 12 – Friday	Waste Management Certificate Ceremony Residence Halls close for non-graduating seniors 5:00 p.m.
December 13 – Saturday	COMMENCEMENT Residence Halls close for graduating seniors 3:00 p.m.
December 15 – Monday	Grades Due By 3:00 p.m.

# NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

## 2003 – 2005 UNIVERSITY ACADEMIC CALENDAR

### SPRING SEMESTER 2004

January 2 – Friday	New Year's Resolution Party
January 4 – Sunday	New Students in Residence Hall Report (Residence Halls open 9:00 a.m. - 3:00 p.m.)
January 5-6 Mon.-Tues.	REGISTRATION FOR CONTINUING STUDENTS Orientation, Advisement and Registration for New Students
January 6 – Tuesday	Graduate Student Orientation
January 7 – Wednesday	CLASSES BEGIN LATE REGISTRATION BEGINS (\$20.00 late fee)
January 8 – Thursday	Deadline for PBS Certification Admissions Applications
January 16 – Friday	LAST DAY TO ADD or AUDIT A COURSE LAST DAY TO DROP AND RECEIVE FINANCIAL CREDIT LAST DAY TO APPLY FOR SPRING GRADUATION LAST DAY TO RECEIVE BOOK ALLOWANCE Graduate Students deadline to apply for spring graduation Graduate Students submit Final Comprehensive Exam Applications LATE REGISTRATION ENDS
January 19 – Monday	UNIVERSITY HOLIDAY (Martin Luther King, Jr.)
January 2-8 – Wednesday	Ronald E. McNair Memorial Day (classes are not cancelled)
February 9 – Monday	Grade Evaluation For Student Athletes
February 23 – Monday	Deadline to Remove Incomplete(s) received Fall 2003
February 27 – Friday	Deadline to apply for Certificate in Entrepreneurship Deadline to apply for Waste Management Certificates
March 3 – Wednesday	Mid-term grades due
March 6 – Saturday	Residence Halls close 1:00 p.m.
March 8-12 – Mon.-Fri.	SPRING BREAK
March 14 – Sunday	Residence Halls re-open 9:00 a.m.
March 17 – Wednesday	LAST DAY TO DROP A COURSE WITHOUT GRADE EVALUATION
March 18 – Thursday	HONOR'S CONVOCATION (Classes are suspended from 10:00 a.m. – 12:00 Noon)
March 29-May 13 Mon.-Thurs.	Early Summer School Registration
April 1 – Thursday	Deadline for Graduate Admission Applications for HDSV – Counseling Program for Fall 2004 Applications for Fall Semester Admission for International Students are due
April 1-7 Thurs.-Wed.	Graduate Student Appreciation Week
April 5 – Monday	LAST DAY TO WITHDRAW FROM THE UNIVERSITY WITHOUT GRADE EVALUATION Last day to defend Thesis/Dissertation
April 5 – 14 Mon.-Wed.	ADVISEMENT AND REGISTRATION
April 9 – Friday	UNIVERSITY HOLIDAY (Good Friday)
April 12 – Monday	Grade Evaluation for Student Athletes Defended and approved Thesis/Dissertation due in Graduate School Office
April 27 – Tuesday	Thesis/Dissertation print copies for binding due in Graduate School Office
April 28 – Wednesday	CLASSES END



April 29 – Thursday	READING DAY
April 30 – May 6 Fri.-Thurs.	FINAL EXAMS
May 7 – Friday	Grades due by 2:00 p.m. Residence Halls close for non-graduating seniors 5:00 p.m. Waste Management Certificate Ceremony
May 8 – Saturday	COMMENCEMENT Residence Halls close for graduating seniors 3:00 p.m. ACADEMIC YEAR ENDS

# NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

## 2003 – 2005 UNIVERSITY ACADEMIC CALENDAR

### FALL SEMESTER 2004

August	Tuition, Fees, Room and Board due
August 8-Sunday	New Students in Residence Hall Report (Residence Halls open 9:00 a.m.-3:00 p.m.) Orientation for New Students (Freshmen, Transfer, Special, etc.) Testing for Designated Populations
August 9-Monday	Orientation for New Students (Freshmen, Transfer, Special, etc.) Testing for Designated Populations
August 10-13 Tues.-Fri.	Orientation, Advisement and Registration for New Students
August 12-Thursday	CONTINUING STUDENTS REPORT (Residence Halls open 9:00 a.m.- 3:00 p.m.) REGISTRATION FOR CONTINUING STUDENTS
August 12-Thursday	Graduate Student Orientation
August 12-13 Thurs.-Fri.	Graduate Teaching Assistants Training
August 16-Monday	CLASSES BEGIN LATE REGISTRATION BEGINS (\$20.00 late fee)
August	Deadline For PBS Certification Admission Applications
August 20-Friday	LAST DAY TO ADD or AUDIT A COURSE LAST DAY TO DROP AND RECEIVE FINANCIAL CREDIT LAST DAY TO APPLY FOR FALL GRADUATION LATE REGISTRATION ENDS (Includes tuition waivers) LAST DAY TO RECEIVE BOOK ALLOWANCE
August 27-Friday	Graduate Students deadline to apply for graduation
September 6-Monday	UNIVERSITY HOLIDAY (Labor Day)
September 17-Friday	Grade Evaluation for Student Athletes
September	UNIVERSITY DAY
September 28-Tuesday	Deadline to remove Incomplete(s) received Spring and Summer 2004
October 7-Thursday	FOUNDER'S DAY (Classes are suspended from 10:00 a.m.-12:00 Noon)
October 9-Saturday	HOMECOMING
October 11-12 Mon.-Tues.	FALL BREAK
October 22-Friday	Mid-term grades due
October	Fall Open House for Transfer/Adult Students
November 1-Monday	LAST DAY TO DROP A COURSE WITHOUT GRADE EVALUATION
Nov. 1-5 Mon.-Fri.	Final Comprehensive Exam Week (Graduate Students)
October	Deadline to apply for Waste Management Certificates Deadline to apply for Certificate in Entrepreneurship
November 1-Monday	Deadline for Graduate/Doctoral/International admission applications for Spring 2005
November	Family Weekend/Fall Open House for high school juniors and seniors (Bethune Cookman Game)
November 1-10 Mon.-Wed.	ADVISEMENT AND REGISTRATION
November 4-Thursday	LAST DAY TO WITHDRAW FROM THE UNIVERSITY WITHOUT GRADE EVALUATION
November 11-Thursday	Grade Evaluation for Student Athlete
November 5-Friday	Last day to defend Thesis/Dissertation



November 8-Monday	Defended and approved Thesis/Dissertation due in Graduate School Office
November 24-Wednesday	THANKSGIVING HOLIDAY begins at 8:00 a.m.
November 29-Monday	THANKSGIVING HOLIDAY ends at 7:00 p.m. Thesis/Dissertation print copies for binding due in Graduate School Office CLASSES END
November 30-Tuesday	READING DAY
December	Applications for Spring semester admission to the University are due
December 1-7 Wed.-Tues.	FINAL EXAMS
December 8-Wednesday	Grades due by 3:00 p.m.
December 10-Friday	Waste Management Certificate Ceremony Residence Halls close for non graduating seniors 5:00 p.m.
December 11-Saturday	COMMENCEMENT Residence Halls close for graduating seniors 3:00 p.m.

# NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

## 2003 – 2005 UNIVERSITY ACADEMIC CALENDAR

### SPRING SEMESTER 2005

January	New Year's Resolution Party
January 5-Wednesday	Residence Halls open 9:00 a.m.-3:00 p.m. New Students In Residence Halls Report (Residence Halls open 9:00 a.m.- 3:00 p.m.)
January 6-Thursday	REGISTRATION FOR CONTINUING STUDENTS Orientation, Advisement and Registration for New Students Tuition, Fees, Room and Board due 8:30 a.m.-2:00 p.m.)
January 6-7 Thur.-Fri.	Graduate Teaching Assistants Training
January 7-Friday	Graduate Student Orientation
January 10-Monday	CLASSES BEGIN LATE REGISTRATION BEGINS (\$20.00 late fee)
January	Deadline For PBS Certification Admissions Applications
January 14-Friday	LAST DAY TO ADD or AUDIT A COURSE LAST DAY TO DROP AND RECEIVE FINANCIAL CREDIT LAST DAY TO APPLY FOR SPRING GRADUATION LAST DAY TO RECEIVE BOOK ALLOWANCE LATE REGISTRATION ENDS (Includes tuition waivers)
January 17-Monday	UNIVERSITY HOLIDAY (Martin Luther King, Jr.)
January 22-Saturday	Graduate Students deadline to apply for spring graduation
January 28-Friday	Ronald E. McNair Memorial Day (classes are not cancelled)
February 14-Monday	Grade Evaluation For Student Athletes
February 21-Monday	Deadline to Remove Incomplete(s) received Fall 2004
February	Deadline to apply for Certificate in Entrepreneurship Deadline to apply for Waste Management Certificates
March 2-Wednesday	Mid-term grades due
March 5-Saturday	Residence Halls close 1:00 p.m.
March 7-11 Mon.-Fri.	SPRING BREAK
March 13-Sunday	Residence Halls re-open 9:00 a.m.
March 14-18 Mon.-Fri.	Final Comprehensive Exam Week (Graduate Students)
March 17-Thursday	HONOR'S CONVOCATION (Classes are suspended from 10:00 – 12:00 Noon)
March 21-Monday	LAST DAY TO DROP A COURSE WITHOUT GRADE EVALUATION
March 25-Friday	UNIVERSITY HOLIDAY (Good Friday) Early Summer School Registration
April 1-7 Fri.-Thur.	Graduate Student Appreciation Week
April	Deadline for Graduate Admission Applications for HDSV-Counseling Program for Fall 2005
April 1-Friday	Deadline for Graduate/Doctoral/International admission applications for Fall 2005
April 4-13 Mon.-Wed.	ADVISEMENT AND REGISTRATION
April 6-Wednesday	LAST DAY TO WITHDRAW FROM THE UNIVERSITY WITHOUT GRADE EVALUATION
April 8-Friday	Grade Evaluation for Student Athletes Last day to defend Thesis/Dissertation
April 11-Monday	Defended and approved Thesis/Dissertation due in Graduate School Office

April 25-Monday	Thesis/Dissertation print copies for binding due in Graduate School Office
April 26-Tuesday	CLASSES END
April 27-Wednesday	READING DAY
Apr. 28-May 4 Thurs.-Wed.	FINAL EXAMS
May 5-Thursday	<p>Grades due by 2:00 p.m.</p> <p>Residence Halls close for non graduating seniors 5:00 p.m.</p> <p>Waste Management Certificate Ceremony</p>
May 6-Friday	COMMENCEMENT
May 7-Saturday	Residence Halls close for graduating seniors 3:00 p.m.





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## GENERAL INFORMATION

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### North Carolina Agricultural and Technical State University

#### HISTORICAL STATEMENT

Today, one of the nation's leading Historically Black Universities and Colleges (HBCU), North Carolina Agricultural and Technical State University is recognized as the top producing university for African American engineers and technologists. The University's programs have numerous accreditations including the first nationally accredited AACSB accounting program in the nation among HBCUs. The university's history as one of only eighteen HBCUs 1890 land-grant universities is well reflected in agriculture, animal science, and environmental science programs, and a growing student enrollment is a further reflection of the demands for the North Carolina A&T's programs in education, nursing, and arts and sciences. North Carolina A&T also has a rich civil rights legacy, and its students, especially the Greensboro Four who are credited with beginning the movement, played a prominent role in the sit-ins of the 1960s.

Today's university has changed a great deal from the Agricultural and Mechanical College for the "Colored Race" established by an act of the General Assembly of North Carolina ratified on March 9, 1891. The College actually began operation during the school year of 1890-91, before the passage of the state law creating it.

The scope of degree programs has been expanded to meet new demands. The first graduate degree was approved when the General Assembly authorized the institution to grant the Master of Science degree in education and certain other fields in 1939. The first master's degree was awarded in 1941.

The General Assembly repealed previous acts describing the purpose of the College in 1957, and redefined its purpose as follows: *"The primary purpose of the College shall be to teach the Agricultural and Technical Arts and Sciences and such branches of learning as related thereto, the training of teachers, supervisors, and administrators for the public schools of the State, including the preparation of such teachers, supervisors and administrators for the Master's degree. Such other programs of a professional or occupational nature may be offered as shall be approved by the North Carolina Board of Higher Education, consistent with the appropriations made therefore."*

North Carolina's General Assembly voted to elevate the College to the status of a Regional University effective July 1, 1967. On October 30, 1971, the General Assembly ratified an Act to consolidate the Institutions of Higher Learning in North Carolina. Under the provisions of this Act, North Carolina Agricultural and Technical State University became a constituent institution of The University of North Carolina effective July 1, 1972.

Nine presidents/chancellors have served the Institution since it was founded in 1891. They are as follows: Dr. J. O. Crosby (1892-1896), Dr. James B. Dudley (1896-1925), Dr. F.D. Bluford (1925-1955), Dr. Warmoth T. Gibbs (1956-1960), Dr. Samuel DeWitt Proctor (1960-1964), Dr. Lewis C. Dowdy (1964-1980), Dr. Cleon F. Thompson (Interim Chancellor - 1980-1981), Dr. Edward B. Fort (1981-1999), and Dr. James C. Renick (1999-Present).

# MISSION, PURPOSE AND GOALS OF THE UNIVERSITY

## Mission Statement

North Carolina Agricultural and Technical State University is a public, comprehensive, land-grant university committed to fulfilling its fundamental purposes through exemplary undergraduate and graduate instruction, scholarly and creative research, and effective public service. The university offers degree programs at the baccalaureate, master's and doctoral levels with emphasis on engineering, science, technology, literature and other academic areas. As one of North Carolina's three engineering colleges, the university offers Ph.D. programs in engineering. Basic and applied research is conducted by faculty in university centers of excellence, in interinstitutional relationships, and through significant involvement with several public and private agencies. The university also conducts major research through engineering, transportation, and its extension programs in agriculture.

For the present planning period (1999-2001), the University will continue to place emphasis on strengthening its programs in engineering, the sciences, and technology. The University is also authorized to plan, in conjunction with the University of North Carolina at Greensboro, a joint master's degree program in social work.

The purpose of the University is to provide an intellectual setting where students in higher education may find a sense of identification, belonging, responsibility, and achievement that will prepare them for roles of leadership and service in the communities where they will live and work. In this sense, the University serves as a laboratory for the development of excellence in teaching, research and public service.

The program of the University focuses on the broad fields of agriculture, engineering, technology, business, education, nursing, the liberal arts and science.

The major goals of the University as approved by the faculty are as follows:

1. To help students improve their interpersonal and communication skills.
2. To insure adequate career preparation for students that will enable them to lead productive lives.
3. To develop innovative instructional programs that will meet the needs of a diverse student body and the expectations of the various professions.
4. To maintain an environment which fosters quality instruction and encourages the further professional development of faculty and staff which supports the ideals of academic freedom and shared governance.
5. To assist students in developing their powers of critical and analytical thinking.
6. To promote managerial efficiency in all administrative functions, including the continued development of operational efficiency and productivity in the accounting and fiscal system of the University consistent with the needs of the various University programs and functions and with the expectations of state and federal regulations.
7. To assist students in developing in-depth competence in at least one subject area for a global economy and for an environment with changing technology.
8. To aid students in the further development of self-confidence and a positive self image.
9. To identify and secure additional sources for internal and external funds to support the development of competitive financial aid awards to academically qualified students and to needy students.
10. To further develop and maintain the institutional research and planning processes that are necessary for the continued competitiveness, relevance, productivity, and credibility of the University, its programs, and its operations.



11. To develop and maintain undergraduate and graduate programs of high academic quality and excellence.
12. To encourage research and other creative endeavors by the faculty and students.
13. To identify and help satisfy educational, cultural and other public service needs in the state, nation, and international environment.
14. To plan, construct, and maintain physical facilities for the achievement of the goals of the educational programs, research, and administrative functions.

## **VISION**

Building upon a solid foundation in academic programs, the faculty, staff and students endorsed the FUTURES strategic vision toward an interdisciplinary university. The adoption of the vision statement and a set of five goals are aimed at enhancing the culture of high standards in all programs and facilities and for all stakeholders — students, faculty, staff, alumni, community, public and private sector friends of the University.

*North Carolina Agricultural and Technical State University is a learner-centered community that develops and preserves intellectual capital through interdisciplinary learning, discovery, engagement, and operational excellence.*

Goal One: Establish and ensure an interdisciplinary focus for North Carolina A&T that mandates overall high quality, continued competitiveness, and effective involvement of global strategic partners in marketing and delivery of programs and operations.

Goal Two: Deliver visionary and distinctive interdisciplinary learning, discovery, and engagement that include collaborations and partnerships as part of the learning experience.

Goal Three: Foster a responsive learning environment that utilizes an efficiently integrated administrative support system for high quality programs, research and collegial interactions, and effectively disseminates consistent information to University stakeholders.

Goal Four: Provides superior: readily available student services and programs that recognize and respond to diverse student needs.

Goal Five: Enhance the diversify the University's resource base through effective fund-raising, entrepreneurial initiatives, enhanced facilities, and sponsored research programs.

## **POLICY GOVERNING PROGRAMS AND COURSE OFFERINGS**

All provisions, regulations, degree programs, course listings, etc., in effect when this catalogue went to press are subject to revision by the appropriate governing bodies of North Carolina Agricultural and Technical State University. Such changes will not affect the graduation requirements of students who enroll under the provisions of the catalogue.

## **NONDISCRIMINATION POLICY AND INTEGRATION STATEMENT**

North Carolina Agricultural and Technical State University is committed to equality of educational opportunity and does not discriminate against applicants, students, or employees based on race, color, national origin, religion, gender, age, or disability. Moreover, North Carolina Agricultural and Technical State University is open to people of all races and actively seeks to promote racial integration by recruiting and enrolling a larger number of white students.

North Carolina Agricultural and Technical State University supports the protections available to members of its community under all applicable Federal laws, including Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections

799A and 845 of the Public Health Service Act, the Equal Pay and Age Discrimination Acts, the Rehabilitation Act of 1973, and Executive Order 11246.

## **THE UNIVERSITY OF NORTH CAROLINA**

In North Carolina, all the public educational institutions that grant baccalaureate degrees are part of the University of North Carolina. North Carolina Agricultural and Technical State University is one of the 16 constituent institutions of the multi-campus state university.

The University of North Carolina, chartered by the N.C. General Assembly in 1789, was the first public university in the United States to open its doors and the only one to graduate students in the eighteenth century. The first class was admitted in Chapel Hill in 1795. For the next 136 years, the only campus of the University of North Carolina was at Chapel Hill.

In 1877, the NC General Assembly began sponsoring additional institutions of higher education, diverse in origin and purpose. Five were historically black institutions, and another was founded to educate American Indians. Several were created to prepare teachers for the public schools. Others had a technological emphasis. One is a training school for performing artists.

In 1931, the NC General Assembly redefined the University of North Carolina to include three state-supported institutions: the campus at Chapel Hill (now the University of North Carolina at Chapel Hill), North Carolina State College (now North Carolina State University at Raleigh), and Woman's College (now the University of North Carolina at Greensboro). The new multi-campus University operated with one board of trustees and one president. By 1969, three additional campuses had joined the University through legislative action: the University of North Carolina at Charlotte, the University of North Carolina at Asheville, and the University of North Carolina at Wilmington.

In 1971, the General Assembly passed legislation bringing into the University of North Carolina the state's ten remaining public senior institutions, each of which had until then been legally separate: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, the North Carolina School of the Arts, Pembroke State University, Western Carolina University, and Winston-Salem State University. This action created the current 16-campus University. (In 1985, the North Carolina School of Science and Mathematics, a residential high school for gifted students, was declared an affiliated school of the University; and in 1996, Pembroke State University was renamed The University of North Carolina at Pembroke through Legislative action.)

The UNC Board of Governors is the policy-making body legally charged with "the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." It elects the president, who administers the University. The 32 voting members of the Board of Governors are elected by the General Assembly for four-year terms. Former board chairmen and board members who are former governors of North Carolina may continue to serve for limited periods as non-voting members emeriti. The president of the UNC Association of Student Governments, or that student's designee, is also a non-voting member.

Each of the 16 constituent institutions is headed by a chancellor, who is chosen by the Board of Governors on the president's nomination and is responsible to the president. Each institution has a board of trustees consisting of eight members elected by the Board of Governors, four appointed by the governor, and the president of the student body, who serves ex-officio. (The NC School of the Arts has two additional ex-officio members.) Each board of trustees holds extensive powers over academic and other operations of its institution on delegation from the Board of Governors.

## ORGANIZATION OF THE UNIVERSITY

### Board of Governors The University of North Carolina J. Bradley Wilson, Chair

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G. Irvin Aldridge  
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J. Addison Bell  
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Hannah D. Gage  
Willie J. Gilchrist  
H. Frank Grainger  
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Peter Keber  
Adelaide Daniels Key  
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Ruth Dial Woods

### Emeritus Member

James E. Holshouser, Jr.

### Ex Officio Member

Jonathan L. Ducote

### THE UNIVERSITY OF NORTH CAROLINA OFFICERS OF ADMINISTRATION (Sixteen Constituent Institutions)

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*President*  
GRETCHEN M. BATAILLE,  
*Senior Vice President, Academic  
Affairs*  
ALAN R. MABE  
*Vice President for Academic  
Planning*

JEFFREY DAVIES,  
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*Vice President for Public Affairs and  
University Advancement*  
VACANT  
*Vice President for Program  
Assessment and Public Service*

RICHARD L. THOMPSON,  
*Vice President for University  
School Programs*  
ROBYN RENDER,  
*Vice President for Information  
Resources and CIO*  
LESLIE WINNER,  
*Vice President and General  
Counsel*

### GOVERNANCE OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

North Carolina Agricultural and Technical State University is a constituent institution of The University of North Carolina. It functions under the jurisdiction of a thirty-two member Board of Governors of The University of North Carolina elected by the General Assembly of North Carolina. Policies of the Board of Governors are administered by the President of the University and her staff. They constitute the General Administration and are located in Chapel Hill.

The Board of Trustees of North Carolina Agricultural and Technical State University consists of thirteen members. Eight members are appointed by the Board of Governors, four are appointed by the Governor of the State, and the President of the Student Government Association serves as an ex officio member. The Board of Trustees received its authority by delegation from the Board of Governors.

The Chancellor is the chief administrative officer of the University.

The University Senate and The University Council are the principal policy recommending bodies of the institution.



## BOARD OF TRUSTEES

John H. Becton  
Milton S. Brown, III  
Carole Bruce  
D. Hayes Clement

Henry H. Isaacson  
Velma R. Speight-Buford  
Michael L. Suggs

Gerald L. Truesdale  
Steve Watson  
Joseph A. Williams

**Ex Officio Member**  
President, Student Government Association

## OFFICERS OF ADMINISTRATION

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B.S., M.A., Ph.D.  
*Interim Vice Chancellor for*  
*Student Affairs*

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B.A.  
*Vice Chancellor for Development*  
*and University Relations*  
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B.S., M.Ed., Ph.D.  
*Vice Chancellor for Research*  
RODNEY HARRIGAN,  
B.S., M.S.  
*Vice Chancellor for*  
*Academic Affairs/Computing and*  
*Information Technology*

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*Special Assistant to the*  
*Chancellor for Legal Counsel*  
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*Executive Assistant to the*  
*Chancellor*  
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*Interim, Internal Auditor*

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*for Academic Affairs*  
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*Academic Affairs/Undergraduate*  
*Programs*  
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B.S., M.S., Ph.D.  
*Associate Vice Chancellor for*  
*Academic Affairs/Graduate Studies*  
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*Assistant Vice Chancellor*  
*for Continuing Education*  
*and Summer Sessions*  
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*Associate Vice Chancellor for*  
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*and Planning*  
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*Dean, School of Agriculture and*  
*Environmental Sciences*  
CAESAR JACKSON,  
B.E.T.E.E., M.E.E.E., Ph.D.  
*Interim Dean, College of Arts*  
*and Sciences*

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B.A., M.B.A., Ph.D.  
*Dean, School of Business and*  
*Economics*  
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B.A., M.A., Ph.D.  
*Dean, School of Education*  
JOSEPH MONROE,  
B.S., M.S., Ph.D.  
*Dean, College of Engineering*  
PATRICIA PRICE LEA,  
B.S.N., M.S.N., M.S.Ed., Ph.D.  
*Interim Dean, School of Nursing*  
ELAZER BARNETTE,  
B.A., M.A., Ph.D.  
*Dean, School of Technology*  
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B.S., M.L.S.  
*Director of Library Services*  
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B.S., M.A., Ph.D.  
*Director of The Center for*  
*Student Success*  
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B.S., M.S., Ph.D.  
*Director of Waste Management*  
*Institute*  
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*Professor of Military Science*

LEE YOUNG,  
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*Assistant Vice Chancellor for*  
*Enrollment Management and*  
*Director of Admissions*  
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B.S., M.S.  
*University Registrar*  
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B.S., M.S.  
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B.A., M.B.A.  
*Director of Administrative*  
*Information Systems*  
SHERRI AVENT,  
B.S., M.B.A.  
*Director of Financial Aid*  
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B.A., M.A.  
*EPA Administrator*  
PETER MEYERS,  
B.A., M.A., Ph.D.  
*Director of the University*  
*Honors Program*  
MINNIE BATTLE MAYES  
B.A., M.A.  
*Director of the Office of*  
*International Programs*

## Student Affairs

ROSELLE WILSON,  
B.S., M.A., Ph.D.  
*Interim Vice Chancellor for Student  
Affairs*  
DOROTHY J. HARRIS,  
B.S., M.S., Ed.D.  
*Executive Director for  
Student Development*  
JOYCE EDWARDS,  
B.S., M.S.  
*Executive Director for Career  
Services and Experimental Learning*  
CARMEN TILLERY,  
B.S., M.S., Ph.D.  
*Executive Director for Housing  
& Residence Life*

VACANT,  
*Executive Director for  
Auxiliary Services*  
SHARON R. MARTIN,  
B.S., M.S.  
*Director of International Students  
and Scholars*  
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B.S., M.S.  
*Director of Veteran and Disability  
Support Services*  
LINDA WILSON,  
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*Director for Health Services*  
CHARLIE WILLIAMS,  
B.S., M.S.  
*Director of Student Support Services*

BEVERLY WALLACE,  
B. S., M.S.  
*Director of Upward Bound*  
JUDY RASHID,  
B.S., M.S., Ed.D.  
*Dean of Students*  
CLIFF LOWERY,  
B.S., M.S., Ed.D.  
*Director for Minority Affairs*  
RUBY REID,  
B.S., M.S.  
*Director for  
Ronald E. McNair Program*  
DENISE IVERSON-PAYNE  
B.A., M.Ed.  
*Director of Orientation, First Year  
Experience and Parent Programs*

## Business and Finance

WILLIE T. ELLIS, JR.,  
B.S., M.B.A.  
*Vice Chancellor for Business  
and Finance*  
AKUA BROWN,  
B.S.  
*Assistant Vice Chancellor for  
Budget and Planning*  
SCOTT HUMMEL,  
B.S., C.P.A.  
*Assistant Vice Chancellor for  
Business and Finance/  
Comptroller*  
VACANT,  
*Director of Accounting*

LOLETA CHAVIS,  
B.A.  
*Interim Director of Human Resources*  
MARLON LYNCH,  
B.A.  
*Director of Police and Public Safety*  
LAVONNE MATTHEWS,  
B.A.  
*Director of Contracts and Grants*  
TED A. LITTLE,  
B.S.  
*Director of Purchasing*  
TODD JOHNSON,  
B.A., M.S.  
*Director of Auxiliary Services*

KIM SOWELL,  
B.S.  
*Treasurer*  
GODFRIED RIBERIO-YEMOSIO,  
*Food Services Director*  
KATHERINE BURCKLEY,  
B.S., C.P.A.  
*Reporting Director*  
ANDREW PERKINS, JR.  
B.S., M.S.  
*Assistant Vice Chancellor  
for Business and Finance/Facilities*  
REGINALD WADE,  
B.S.  
*Assistant Vice Chancellor  
for Business Services*

## Development and University Relations

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B.A.  
*Vice Chancellor for Development  
and University Relations*  
MICHAEL MAGOON,  
B.A., M.S.  
*Associate Vice Chancellor for  
Development and University  
Relations*  
CHERYL HARRELSON,  
B.A., M.A.  
*Director of Advancement Services*  
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B.A.  
*Development Officer/Planned Gifts*  
JOHN WHITE,  
B.A.  
*Development Officer, Athletics*

MARK BLOOMQUIST,  
B.S., M.B.A.  
*Development Officer, College  
of Engineering*  
PATRICIA BROWN,  
B.A.  
*Annual Fund Director*  
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B.S., M.S.  
*Assistant Vice Chancellor for  
University Relations*  
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B.A.  
*Development Officer, School of  
Education*

HARRIET DAVIS,  
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*Director of Alumni Affairs*  
NETTIE ROWLAND,  
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SANDRA BROWN,  
B.A., M.A.  
*Director of Publications*  
LaDANIEL GATLING,  
B.A., M.A.  
*Development Officer,  
School of Agriculture and  
Environmental Sciences*

## Research

EARNESTINE PSALMONDS,  
B.S., M.Ed., Ph.D.  
*Vice Chancellor for Research  
and Commercialization*

Vacant,  
B.S.  
*Director of Sponsored Programs*

DOUG SPEIGHT,  
B.S.  
*Interim, Director of Technology  
Transfer*

## LOCATION

North Carolina Agricultural and Technical State University is located in the city of Greensboro, North Carolina. This city is 300 miles south of Washington, D.C. and 349 miles north of Atlanta. It is readily accessible by air, bus and automobile.

The city offers a variety of cultural activities and recreational facilities. These include athletic events, concerts, bowling, boating, fishing, tennis, golf and other popular forms of recreation.

The University is located near major shopping centers, churches, theaters and medical facilities. The heavy concentration provides, manufacturing plants, service industries, governmental agencies and shopping centers provides an opportunity for many students who desire part-time employment while attending the University.

## FACILITIES

The main campus of the University is located on land holdings in excess of 191 acres. The University farm, located east of the Greensboro City limits, includes approximately 600 acres of land and modern farm buildings. The approximate value of the physical plant is \$173 million.

### University Buildings

L.C. Dowdy Administration Building  
Dudley Building – Reed & Taylor  
Art Galleries  
F.D. Bluford Library  
Richard B. Harrison Auditorium  
Charles Moore Gymnasium  
Coltrane Hall (Headquarters for N.C.  
Agricultural Extension Service)  
The Memorial Student Union  
The Oaks (Faculty Club)  
Corbett Sports Center  
The Joseph Bryan House  
Garrett House

### Dormitories

Curtis Hall  
Haley Hall  
Holland Hall  
Holt Hall  
Morrison Hall  
Morrow  
Vanstory Hall  
Benbow Street Honors House  
Daniel Street Honors Houses (2)  
Scott Hall  
Zoe P. Barbee Hall  
Aggie Inn  
Cooper Hall  
Aggie Terrace  
Aggie Suites



### **Classroom and Laboratory Buildings**

Carver Hall — School of Agriculture  
Cherry Hall — College of Engineering  
Crosby Hall — College of Arts and Sciences  
Gibbs Hall — Social Sciences & School of  
Graduate Studies  
Hodgin Hall — School of Education  
Noble Hall — School of Nursing  
Benbow Hall — Human Environment and  
Family Sciences  
Hines Hall — Chemistry  
Socwell Hall – Bioenvironmental Engineering  
Ward Hall – Police and Parking Services  
Reid Greenhouses — Plant Science  
Graham Hall — College of Engineering  
Frazier Hall — Music and Fine Arts  
Price Hall — School of Technology  
Price Hall Annex — Child Development  
Laboratory  
Campbell Hall — ROTC Headquarters  
Barnes Hall — Biology  
Merrick Hall — School of Business and  
Economics  
J.M. Martena Hall — Physics, Mathematics  
and Physical Science  
Reed African Heritage Center — Museum  
BC Webb Hall — Animal Science  
Ron McNair Hall — College of Engineering  
Smith Hall – School of Technology  
General Classroom Building #1

### **Service Buildings**

Murphy Hall – Student Services  
Dowdy Building – Student Financial Aid,  
Registrar's, and Treasurer's Office  
Williams Hall – Cafeteria  
Brown Hall – University Bookstore, Ticket Office,  
and Mail Center  
Sebastian Health Center  
T. E. Neal Heating Plant  
Clyde DeHuguley – Facilities  
Music Annex  
1020 Wendover Avenue – Summer School &  
Continuing Education, Collections

### **Other Facilities**

Alumni Stadium  
Athletic Field – including three practice fields  
for football, quarter mile track, baseball  
diamond.  
Piedmont Triad Center for Advanced  
Manufacturing (PT CAM)  
Register House  
Strickland Fieldhouse – Athletic Offices  
Environmental Studies Lab-Farm  
Swine Research Center Farm  
Charles H. Moore School – Agriculture  
Research Center  
GEAR-UP Pre-College Initiative  
Motorsport Center – Aggie Racing  
Bryan Fitness & Wellness Center

### **Research Facilities**

The Edward B. Fort Interdisciplinary Research Center (IRC)

## **COLLEGES, SCHOOLS AND DIVISION OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY**

North Carolina Agricultural and Technical State University includes the following colleges, schools and divisions: The School of Agriculture and Environmental Sciences, The College of Arts and Sciences, The School of Business and Economics, The School of Education, The School of Technology, The College of Engineering, The School of Nursing, The Graduate School, and the Division of Continuing Education and Summer School.

### **ACCREDITATION AND INSTITUTIONAL MEMBERSHIPS**

North Carolina Agricultural and Technical State University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4097: Telephone number 404-679-4501) to award bachelor's, master's, and doctoral degrees.

*A listing of programs and their accrediting agencies follows:*

The program of Industrial Technology is accredited by the National Association of Industrial Technology;

The Media Program is accredited by the Association of Educational Communications and Technology;

The undergraduate programs in agricultural, architectural, electrical, industrial, and mechanical engineering, leading to the B.S. degree, are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology;

The undergraduate program in Landscape Architecture is accredited by the Landscape Architecture Accreditation Board;

The School of Nursing is accredited by the National League for Nursing, Department of Baccalaureate and Higher Degree Programs;

The Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education;

The Department of Chemistry is accredited by the American Chemical Society;

The School of Business and Economics is accredited by the American Assembly of Collegiate Schools of Business;

The Department of Accounting is accredited by the American Assembly of Collegiate Schools of Business;

The Social Work Program of the Department of Sociology and Social Work is accredited by the Council on Social Work Education;

The Department of Home Economics is accredited by The American Home Economics Association; and

The Music Department is accredited by the National Association of Schools of Music.

The Theater Arts Program in Acting is accredited by The National Association of Schools of Theater

*Below is a listing of professional organizations of which the University is a member:*

American Association of Colleges for Teacher Education  
American Association of Collegiate Registrars and Admission Officers  
National Association of State Universities and Land Grant Colleges  
American Association of Colleges of Nursing  
American College Public Relations Association  
American Council for Construction Education  
Associated Schools of Construction  
American Council on Education  
American Public Welfare Association  
American Library Association  
Association of American Colleges  
Association of Collegiate Deans and Registrars  
Association of Collegiate Schools of Architecture  
College Language Association  
National Association of Business Teacher Education  
American Personnel and Guidance Association  
National Association of Industrial Technology, International Association of Technology Education  
National Association of Student Personnel Administrators  
Association of College Unions International  
National Association of College and University Food Service  
National Commission on Accrediting  
National Institutional Teacher Placement Association  
National League for Nursing, Council of Member Agencies, Department of Baccalaureate and Higher Degree Programs  
North Carolina Association of Colleges and Universities  
North Carolina League of Nursing  
North Carolina Library Association  
National Association of College and University Business Officers  
Southeastern Library Association  
Southern Regional Education Board Council on Collegiate Education for Nursing  
Graduates of the University are eligible for membership in the American Association of University Women

## THE OFFICE OF INTERNATIONAL PROGRAMS (OIP)

The Office of International Programs (OIP) is charged with institutionalizing the university wide globalization initiative. To fill this mission the OIP provides resources for students, faculty and staff to increase their level of international awareness and understanding through study abroad, student and faculty exchange, and global perspectives enrichment programs (i.e., workshops, lectures, cultural events, etc.).

*Study Abroad/Exchange Programs/International Internships:* The Office of International Programs administers North Carolina A&T's study abroad and exchange programs, which provide students the possibility of spending a semester or year at universities in more than 40 countries. Short-term study abroad programs are administered by various academic departments and information about these can be obtained at the OIP. Any student in good academic standing may apply to study abroad.

*Global Studies Certificate Program (GSCP):* Beginning Fall 2003, the Office of International Programs will administer this new, undergraduate interdisciplinary program designed to provide all students the opportunity to better prepare to live and work in a global society. The Global Studies Certificate can be earned while fulfilling the academic requirements for an A&T degree in any discipline. Requirements for the Global Studies Certificate are 24 semester hours as follows: GSCP Introductory Course, three (3) credit hours; GSCP elective courses, six to twelve (6-12) credit hours; Experience Abroad (study or internship), six to twelve (6-12) credit hours; and the GSCP Senior Capstone course, three (3) credit hours.

For additional information about these programs, please contact Mrs. Minnie Battle Mayes, Director, Office of International Programs, Room A-16, CH Moore Building, Greensboro, NC 27411, (336) 334-7104.

## THE HONORS PROGRAM

The Honors Program offers highly talented and motivated students a four-year, student-centered experience of academic enhancement, cultural enrichment, and professional development that stimulates them to reach their full potential and become future leaders. Every aspect of the program provides special opportunities for qualified students to grow intellectually through contact with a community of Honors students and supportive faculty scholars. No matter what a student's future plans, those who participate in the Honors Program will find that it gives them a competitive edge, preparing them for success in the nation's best graduate schools and in their future careers. Through Honors, students can get the best education the University has to offer.

### Admission to and Retention in the Honors Program

Entering freshmen are invited to join the Honors Program if they have earned a cumulative weighted high school GPA of 3.7 and SAT scores totaling 1,050 or above. All public high school Valedictorians and Salutatorians as well as graduates of the North Carolina School of Science and Math are automatically eligible to join if they score at least 1,000 on the SAT and have a cumulative high school GPA of 3.0. Students with 1,200 or above on the SAT are automatically eligible for the Program as long as they compile a cumulative high school GPA of 3.0. Incoming freshmen who are selected for the North Carolina Teaching Fellows Program are also automatically eligible to join Honors.



Students already enrolled at NC A&T State University may join Honors if they have a cumulative GPA of at least 3.5 and have completed at least 12 credit hours of classes. To remain in the Honors Program, students must maintain a cumulative GPA of 3.5 and take one course for Honors credit each semester.

### **Program Description**

A student who joins Honors as an incoming freshman has the opportunity to complete a four year, forty-two (42) semester hour, program of classes distributed as follows: eighteen (18) hours of General Education classes (English, History, etc.) taken for Honors credit, six credit hours of low enrollment Honors Seminars, and eighteen (18) credit hours of Honors-augmented courses in the student's major. Completion of the four-year Honors Program requires a senior thesis or creative project. Students who complete this four-year Honors experience receive special recognition at graduation and on their college transcript.

For various reasons, students may not be able to, or want to, participate in the Honors Program throughout their entire academic career. Accordingly, there are two tracks within the Honors Program that students can choose from if they participate in Honors for only a portion of their academic career. These tracks are:

#### **Track #1: General Honors**

The twenty-four (24) credit hour General Honors Program requires eighteen (18) hours of General Education classes taken for Honors credit and six hours of Honors Seminars.

#### **Track #2: Honors in the Major**

The Honors Program in the Major requires eighteen hours of Honors-augmented classes in the student's major or related courses, six hours of Honors Seminars, and a senior thesis or creative project.

Students who complete either of the Honors tracks are given special recognition at graduation and on their college transcripts.

Students must earn a minimum grade of "B" in any course taken for Honors credit for it to count towards completing any portion of the Honors Program.

For more information, contact: Dr. Peter Meyers, Director, The Honors Program, 329 Gibbs Hall, North Carolina Agricultural and Technical State University, Greensboro, North Carolina 27411. Dr. Meyers can be reached by phone at (336) 256-0277 or by e-mail at [peterm@ncat.edu](mailto:peterm@ncat.edu).

### **ACADEMIC DEGREE PROGRAMS**

*Degree Program.* A program of study with a concentration or (major) in some specified discipline that leads to a degree in that discipline specialty, or in some designated subdivision of the specialty at a particular level of instruction.

All four year degree programs at the University require a minimum of 124 semester hours and a maximum of 128 semester hours, excluding deficiency courses and remedial work for the bachelor's degree. Semester hour requirements beyond 128 must be approved by the Board of Governors.

Students who complete one or more of the courses of study offered by the University will be awarded the degree indicated.

## School of Agriculture and Environmental Sciences

<b>Degree</b>	<b>Program Title</b>	<b>Concentrations</b>
BS	Agricultural Economics	
	Agricultural Economics	(Agricultural Business)
	Agricultural Education	(Ag Professional Service)
	Agricultural Education	(Secondary Education)
	Agricultural Science, Earth and Environmental Sciences	(Earth & Env. Science)
	Agricultural Science, Earth and Environmental Sciences	(Landscape Horticulture Design)
	Agricultural Science, Earth and Environmental Sciences	(Plant Science)
	Agricultural Science, Earth and Environmental Sciences	(Soil Science)
	Agricultural Science, Natural Resources	(Plant Science)
	Animal Science	
	Animal Science	(Animal Industry)
	Child Development	
	Child Development: Early Ed. and Family Studies	(B-K/Teaching)
	Family and Consumer Science	(Fashion Merch. and Design)
	Family and Consumer Science Education	
	Food and Nutritional Sciences	(Dietetics)
	Food and Nutritional Sciences	(Food Science)
	Laboratory Animal Science	
	Landscape Architecture	
MS	Agricultural Economics	
	Agricultural Education	(Professional Licensure)
	Agricultural Education	(Professional Service)
	Animal Health Science	
	Food and Nutritional Sciences	
	Plant and Soil Science	

## College of Arts and Sciences

<b>Degree</b>	<b>Program Title</b>	<b>Concentrations</b>
BA	English	
	History	
	Music	(General)
	Music	(Performance)
	Political Science	
	Psychology	
	Romance Languages and Literatures, French	
	Romance Languages and Literatures, Spanish	
	Sociology	
	Speech	
	Speech	(Speech Pathology/Audiology)
	Visual Arts, Design	
BFA	Professional Theatre	
BS	Applied Mathematics	
	Biology	
	Biology, Secondary Education	
	Chemistry	
	Chemistry, Secondary Education	

	Engineering Physics	
	English, Secondary Education	
	History, Secondary Education	
	Journalism & Mass Communication	(Broadcast Production)
	Journalism & Mass Communication	(Electronic Media & Journalism)
	Journalism & Mass Communication	(Journalism & Mass Communication)
	Journalism & Mass Communication	(Media Management)
	Journalism & Mass Communication	(Print Journalism)
	Journalism & Mass Communication	(Public Relations)
	Mathematics	
	Mathematics, Secondary Education	
	Music Education	
	Physics	
	Physics, Secondary Education	
	Romance Languages and Literatures, French	
	Secondary Education	
	Romance Languages and Literatures, Spanish	
	Secondary Education	
	Visual Arts, Art Education	
BSW	Social Work	
MA	English and African American Literature	
MS	Applied Mathematics	
	Biology	
	Biology, Secondary Education	
	Chemistry	
	Chemistry, Secondary Education	
	English Education	
	History, Secondary Education	
	Mathematics, Secondary Education	
	Physics	
MSW	Social Work	(Jt. with UNC-G)

### School of Business and Economics

Degree	Program Title	Concentrations
BS	Accounting	
	Business Administration	
	Business Education	(Administrative Systems)
	Business Education	(Voc. Bus. Ed.)
	Business Education	(Voc. Bus. Ed.-Data Pro.)
	Economics	
	Finance	
	Management	
	Management	(Management Info. Systems)
	Marketing	
	Transportation	
MSM	Management	(Human Resources Management)
	Management	(Management Info. Systems)
	Management	(Transportation & Business Log.)

### School of Education

Degree	Program Title	Concentrations
BS	Elementary Education	
	Health and Physical Education	(Fitness/Wellness Mgmt)
	Health and Physical Education	(Teaching)

MS	Recreation Administration	
	Special Education	
	Adult Education	
	Counselor Education	
	Health and Physical Education	
MSA	Instructional Technology	
	Middle Grades Education	
MAED	School Administration	
	Elementary Education, General	
	Human Resources	(Agency Counseling)
	Human Resources	(Business and Industry)

### College of Engineering

Degree	Program Title	Concentrations
BS	Architectural Engineering	
	Bioenvironmental Engineering	
	Chemical Engineering	
	Civil Engineering	
	Computer Science	
	Electrical Engineering	
	Industrial Engineering	
MS	Mechanical Engineering	
	Chemical Engineering	
	Civil Engineering	
	Computer Science	
Ph.D.	Electrical Engineering	
	Industrial Engineering	
	Mechanical Engineering	
	Electrical Engineering	
	Industrial Engineering	

### School of Nursing

Degree	Program Title	Concentrations
BSN	Nursing	

### School of Technology

Degree	Program Title	Concentrations
BS	Construction Management	
	Electronics Technology	
	Graphic Communication Systems	
	Manufacturing Systems	
	Occupational Safety and Health	
	Technology Education	
	Vocational - Industrial Education	
MS	Technology Education	
	Vocational - Industrial Education	
MSIT	Industrial Technology	(Construction Management)
	Industrial Technology	(Electronics & Computer Tech.)
	Industrial Technology	(Graphic Communication Systems)
	Industrial Technology	(Manufacturing Systems)
	Industrial Technology	(Occupational Safety & Health)



## **FERDINAND DOUGLASS BLUFORD LIBRARY**

The Ferdinand Douglass Bluford Library is located near the center of the West campus. The current holdings include more than 457,326 bound volumes, and as a select depository in North Carolina for United States government documents, the library contains a collection of over 300,000 official government publications. Current subscriptions include approximately 3,980 print subscriptions to journals and other serials and more than 200,000 electronic full-text serial titles. Other holdings include a collection of videotapes, microforms and other audiovisuals. The library maintains special collections in Archives, Black Studies, and a Chemistry Collection located in the Chemistry Department in Hines Hall on the campus.

Special services are provided through a formal and informal library instructional program, document delivery, interlibrary loans, and a late night study area. During the academic year, the library is open 106 hours each week as shown below. Variations in this schedule are posted.

Monday – Thursday  
7:30 a.m. – 2:00 a.m.

Friday  
7:30 a.m. – 8:00 p.m.

Saturday  
10:00 a.m. – 8:00 p.m.

Sunday  
2:00 p.m. – 12:00 midnight

Late Night Study (During Summer Only)

Sunday – Thursday Until 12:00 midnight

(Remains Open 24 Hours During Exams)

## **EDUCATIONAL SUPPORT CENTERS**

The University's educational support centers include, The Center for Student Success, Academic Enrichment Program (ACE), Learning Resource Laboratory, Writing Center, Administrative Information Systems, Computing and Information Technology, Computer Assisted Learning Laboratory, Academic Tutorial Program, Tutorial/Study Center, the Carver Hall Tutorial Laboratory, Learning Assistance Center (Nursing), Writing Laboratory, Teacher Education Center, Learning Assistance Center (Chemistry), Student Athlete Tutorial Program, Disability Support Services, and Counseling Services.

## **Museums**

The African Heritage Center is an outstanding art museum. Throughout the year, this museum has on display a number of special exhibits of sculpture, paintings, graphics, and other media.

## **OFFICE OF SUMMER SESSIONS AND OUTREACH**

The Office of Summer Sessions and Outreach provides the opportunity to take advantage of a wide range of summer learning experiences in condensed formats that support educational, career and personal enrichment goals. These activities are designed to reach the total community with courses, workshops and programs that are offered to populations of all ages from children to the retiree. The standards of academic achievement and the quality of work required are maintained at the same level as during the regular terms.

The Office has the responsibility for planning, coordinating and administering the University's Summer Sessions and Summer Outreach activities. These programs have been designed to help optimize student progress and to enhance the University's four-year graduation rates by providing degree-related course work for undergraduate and graduate students. Most courses are conveniently taught in five weeks allowing time for work and travel during the summer months.

The summer programs feature several convenient sessions of varying lengths: two five-week sessions, one two-week intersession and one ten-week dual session which runs from the beginning of the first session through the end of the second session. Students are permitted to enroll in a maximum of seven credits each five-week session and in the dual session. Students can take one three-credit hour course during the intersession. There are several short courses and workshops that are scheduled within the two five-week sessions. These programs support the attainment of educational goals for undergraduate and graduate degree candidates at the university or elsewhere and the meeting of certification requirements for teachers and other professional personnel.

The Outreach effort seeks to provide a broad base of support, through collaborative initiatives with the various units on the campus, for pre-college activities for youth that support learning, discovery and engagement in the greater university community. The Office partners with public and private schools in and around the Greensboro area in order to support teacher training and promote interdisciplinary learning experiences at all levels.

### **THE CENTER FOR DISTANCE LEARNING**

The Center for Distance Learning (CDL), in close cooperation with the academic departments, enables students to access degree programs and courses of the University at convenient sites and times. Courses are offered at a distance through online and extension programs. More than 800 people are currently taking classes via Web-based instruction, via interactive video, and on-site instruction. Students and instructors can interact via online group chat sessions, email, CD ROM, DVD, interactive video classrooms, streamed videos, and on-site instruction.

Currently, more than 150 courses are offered online and through extension from all colleges and schools of the University. There are three undergraduate and two graduate online degree programs offered. The degree programs include: 1) Occupational Safety & Health (B.S.), 2) Business Education (B.S.), 3) Electronics Technology (B.S.), 4) Instructional Technology (M.S.), and 5) Vocational Education (M.S.). There is one graduate degree program offered through extension programs, Adult Education (M.S. – Charlotte, NC). In addition, there are five licensure programs in Business Education, Elementary Education, Special Education, Technology Education, and Vocational Industrial Education.

CDL plans to increase the number of academic degree programs offered using state-of-the-art instructional and delivery systems. These systems will continue to address the educational and professional development needs of the University students, faculty, and other stakeholders with a focus on relevance, quality, and utility.

### **THE DIVISION OF INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS (IT&T) SERVICES**

The Division of Information Technology and Telecommunications (IT&T) at North Carolina Agricultural and Technical State University provides assistance to faculty, students, staff, and the community for promoting curricula development, new learning environments pow-

ered by technology, administrative and student support services and research activities. IT&T delivers academic and administrative support services by using the power of information technology to create and sustain a learner- centered community.

The Division of Information Technology and Telecommunications is divided into ten areas: Academy for Teaching and Learning (ATL), Administrative Information Systems (AIS), Center for Distance Learning (CDL), Research Computing (RC), Special Projects and Programs (SPP), Student Technical Services (STS), Systems and Networking (SN), Teaching and Learning Systems (TLS), Telecommunications & Client Services (TCS) and Web Support Services (WSS). In addition, IT&T provides media services to the learner-centered community of Greensboro and the surrounding areas through three major information delivery methods that include WNAA-FM Radio Station, The Campus Television Studio, and five video conferencing sites. WNAA-FM Radio provides on-air educational, cultural and entertainment programs to the learner-centered community of Greensboro and the surrounding areas. The station's cultural, educational and entertainment programs serve as a venue for faculty, students and staff to develop and showcase their creative work, skills and talents to the community as subject area experts. The Television Studio located in Crosby Hall is a major instructional video production center for faculty and students. It serves as a training site for communications majors and produces special event video projects for the university as well as promotional tapes, multicamera productions of theatrical plays and coverage of Honors' Day Convocation and commencement activities. To date, the University has five electronically connected videoconferencing sites for delivering voice, video and text simultaneously. McNair Hall, Center for Distance Learning, the Academy for Teaching and Learning, Smith Hall and Stallings Memorial Ball Room are connected with videoconferencing units that have MultiSite and natural Video functionality. The Videoconferencing Sites create a collaborative information dissemination system for enhancing faculty research and teaching along interdisciplinary lines by allowing both students and faculty from every discipline to interface with programs and activities shared through Internet-Satellite Videoconferencing. The Sites also provide administrative support services through workshops, seminars and conferences that are shared with other Institutions of higher education, Government Agencies and Philanthropic Organizations.

The *Directorate of the Academy for Teaching and Learning (ATL)* is responsible for promoting and coordinating the scholarship of teaching and learning through effective use of pedagogy with learning technologies. The ATL provides instructional consultation, classroom and laboratory observation, assessment and evaluation of instruction, and conducts action research. In addition, the ATL implements various technologies in delivering instruction such as distance learning, teleclassrooms, teleconferences, and videotaping of instruction.

The *Directorate of Administrative Information Systems (AIS)* is responsible for central administrative computing and related information management activities for the University. Administrative Information Systems develops, maintains, and/or provides technical support for the campus financial, human resources, alumni and student information systems as well as appropriate computing for other administrative functions in academic and administrative units.

Administrative Information Systems support the University's mission of instruction, research, and public service by implementing, enhancing, and supporting administrative systems. Administrative Information Systems' focus is easy access to secure, reliable, and timely data. Administrative Information Systems is committed to retaining quality staff, investigating new technologies, and partnering with others to provide technical leadership and effective solutions.



The ***Center for Distance Learning (CDL)*** is responsible for both traditional and non-traditional students in implementing programs and courses to meet their educational needs without extended stays on campus. Courses are offered at a distance through online and extension programs. Students and instructors can interact via online discussion groups, email, streamed videos, and on-site instruction. The Center for Distance Learning serves as a mechanism by which North Carolina Agricultural and Technical State University can achieve its academic goals by developing innovative instructional programs that will meet the needs of a diverse student population.

The ***Directorate of Research Computing (RC)*** supports a variety of services aimed at improving the quality of research through the application of technology. The services consist of providing installation, operation and maintenance of information systems labs, electronic collaboration, technical support of research projects and consulting services.

Additionally this includes optimized utilization and operational enhancements of the computing requirements for improving our research infrastructure. This will also allow an interdisciplinary approach for centralization of information sharing and supplying systems for supercomputing, computational modeling/analysis, e-learning, genomics, bio-informatics, and other research opportunities. For additional information please visit the website: <http://dor.ncat.edu/under/facts/people/marlow/index.htm>.

The ***Directorate of Special Projects and Programs (SPP)*** coordinates the planning efforts of special projects to improve IT efficiency and effectiveness in various administrative operations. The Special Projects and Programs provides project management services in collaboration with all functional areas of the Division of Information Technology & Telecommunications and end-users for special projects. The Special Projects and Programs also provides ad-hoc reporting for the University's Financial Records System (FRS).

The focus of the ***Directorate of Student Technology Services (STS)*** is to enhance information technology support for the University and surrounding community through the employment and professional development of North Carolina A&T students. Student Technology Services will also provide IT Procurement. Instructional Technology procurement consists of assisting the University community with information technology acquisitions while further developing standards, processes, and vendor relationships in this area.

The ***Directorate of Systems and Networking (SN)*** is responsible for the day-to-day management of the academic and administrative computing systems that support the University's mission critical applications. This includes ensuring that the equipment and the supporting network infrastructure are fully functional and readily available.

The ***Directorate of Teaching and Learning Systems (TLS)*** is charged with professional development and training activities of the university with regard to technology proficiency. In addition, this directorate is responsible for project management associated with the university's e-learning platform, Blackboard.

The ***Directorate of Telecommunications and Client Services (TCS)*** covers two areas. The *Telecommunications Services* department is responsible for providing effective voice communication service for the University faculty, staff, and student populations. It includes the installation/administration/maintenance of services such as voice mail, cellular, calling card, pagers and pay phones.

*Client Services* is responsible for providing helpdesk services in information delivery, problem management, and technical troubleshooting for recommended computers and software packages for campus personal computer users. Includes determining standards for computer hardware, software, and related equipment to ensure that such equipment is appropriate for



the University's computing environment. For additional information please visit the website: <http://www.ncat.edu/~cit/csv>.

The *Directorate of Web Support Services (WSS)* addresses website development and communication needs of faculty, staff and students at North Carolina A&T State University by using website development and management tools to provide web-based applications. Web Support Services also uses these tools to share information about the many activities and facets of the University with the online community. WSS also provides opportunities for continued education and skill development for the University community through skills development workshops.

### **THE CENTER FOR STUDENT SUCCESS**

The Center for Student Success is organized to provide services to students who need assistance in strengthening their academic skills. The objective of this program is to promote the academic success of students by providing academic support through advising, facilitating choice of major and career direction, and promoting student integration into the University community. This program helps undeclared students develop a foundation for completing their college careers and assists in the orientation of new students.

The program provides special classes in reading, mathematics, and university survival. Additionally, the program coordinates tutorials, academic monitoring of Student Athletes, peer advising, and campus-wide academic advising and retention.

### **WASTE MANAGEMENT INSTITUTE**

The Waste Management Institute coordinates the interdisciplinary waste management efforts of the University in the areas of instruction, research, and community outreach. Waste Management activities are conducted through faculty members and facilities of the participating departments.

Additionally, the Waste Management Institute administers an undergraduate certificate program. To receive a Waste Management certificate, students are required to complete 18-20 credit hours of approved Waste Management courses. The waste management certificate complements the student's academic major. Also, the certificate highlights the training of A&T students in waste management and environmental security. The certificate is awarded at a special ceremony.

### **PIEDMONT INDEPENDENT COLLEGE ASSOCIATION OF NORTH CAROLINA**

The Piedmont Independent College Association of North Carolina is an organization comprised of North Carolina Agricultural and Technical State University, The University of North Carolina at Greensboro, High Point College, Greensboro College, Bennett College, Guilford College and Guilford Technical Community College. The organization promotes interinstitutional cooperation and cooperative educational activities among the seven institutions. Agreements provide the opportunity for any student to enroll at another institution for a course or courses not offered on one's home campus.

### **THE DIVISION OF DEVELOPMENT AND UNIVERSITY RELATIONS**

The Division of Development and University Relations encompasses the program areas of Development, University Relations, Alumni Affairs, Advancement Services, the University Foundation and other administrative functions related to overall institutional advancement and marketing. In addition, the office aids in conducting the affairs of the North Carolina A&T University Foundation, Inc., which has been established to assist in soliciting gifts,

grants and contributions from public and private sources for such worthy purposes as student scholarships, faculty development, library resources, specialized equipment and cultural and public service programs.

It is the mission of the Division to build, maintain and expand relationships of the University with its many publics for purposes of increasing both the financial and human resources of the University; to cultivate the goodwill of the University's many publics; and to market the University, its programs and services to their best possible advantages.

The Development offices are located in Suite 400 of the Dowdy Administration Building. The University Relations department is located in the Garret House on Nocho Street next to Murphy Hall; Alumni Affairs is located at Bryan House on Salem Street, and the Foundation is located in Aggie Suites off of Benbow Street.

## **DIVISION OF RESEARCH**

The Division of Research administers and manages research and sponsored programs as well as technology transfer and commercialization for the University. Headed by the Vice Chancellor for Research, the organizational structure consists of an Office of Research Services, Office of Sponsored Programs, and an Office of Technology Transfer and Commercialization. The Vice Chancellor is responsible also for managing research centers and institutes, including the Edward B. Fort Interdisciplinary Research Center (IRC, a research facility that supports interdisciplinary applied research and technology innovation. The Division serves as a major service unit for the entire University and provides the following: access to funding opportunity information, program design and development support, linkages to prospective research sponsors, technical assistance with federal regulations and guidelines, assurance of research compliance, research publicity, and research program information.

## **AUXILIARY SERVICES**

The Office of Auxiliary Services is responsible for administering, planning, and directing the University auxiliaries, such as the Aggie OneCard Center, Bookstore, Food Services, Ticket Operations, and Vending Services. This office also supervises and serves as Business Manager for the Athletic Department, Housing, Health Services, Student Union, and Police and Public Safety.

Each auxiliary relates directly to the objectives of the University. Its significant contributions to the realization of University objectives are measured directly by the quality of services rendered. Such functions provide needed services and also allow the University to benefit from these services without substantial cost.

## **BOOKSTORE**

Located on the corner of Laurel and Bluford Street in Brown Hall, the University Bookstore offers a wide variety of services to the University community including the Textbook Pre-Pack Service. The newest addition to it's offerings is the ability to place orders online, place yours today at [www.ncatbookstore.com](http://www.ncatbookstore.com). Freshmen desiring to have their books ready at the beginning of the semester, should use the bookstore's Pre-Pack Service. This service allows incoming freshman to place their order during orientation for Fall semester books, in return textbooks will be ready for pickup in August! In addition, a variety of computer hardware and software supplies are available from Gateway, Compaq, and Apple at educational prices. The Bookstore even offers snacks, school supplies, clothing, cards, notebooks, and even calculators! Other services include expanded store hours to satisfy the *Aggie* in you

during home football games, a photocopying machine, fax services, free notary service, and also a mailing service. For added convenience a Wachovia teller machine is located in the same building. For more information on the Bookstore's offerings please call 336.334.7595 or visit our website at [www.ncatbookstore.com](http://www.ncatbookstore.com).

### **AGGIE ONECARD**

The Aggie OneCard Center is currently located in room 215 of the Memorial Union. Currently, the University patrons and visitors can make purchases at various locations. Students, Faculty, and Staff are able to purchase soft drinks from vending machines across campus, make purchases at the University Bookstore, purchase tickets for campus events, make copies at Bluford Library, pay for health services, and purchase meals at the Williams Cafeteria, Food Court, Aggie Den, and Express Carts using the debit plan feature of their Aggie OneCard. Laundry facility usage can also be covered by the Aggie OneCard. This card also operates as an "access key" for specific buildings in Aggieland. At the present time, Scott B dormitory is the only student living quarters with door access.

If your card is lost or stolen, please report it to the Aggie OneCard Center immediately at (336) 334-7114. This is for your protection and it will prevent others from accessing your accounts. The Aggie OneCard Center is open Monday through Friday from 8am to 5pm. If you need to contact the Aggie OneCard Center after 5pm or on weekends, you should call the University Police Dispatch Office at (336) 334-7675. If your card is not found, there will be a \$20 fee for a replacement, which will have to be paid at the OneCard Center. Your receipt of payment will allow you to obtain another Aggie OneCard.

### **AGGIE C-STORE**

The **Aggie C-Store** is a full-service convenience store located in the Memorial Union. Students can use their Aggie OneCard to purchase a wide variety of perishable/ non-perishable products, which are sold within this unit. Such products include drinks, milk, canned goods, medicine, etc. The Aggie C-Store is open Monday through Thursday from 9am to 8pm. It's convenient operating hours on Friday are 9am to 6pm and on Saturday from 10am to 8pm.

### **TICKET OFFICE**

The University Ticket Office is located in Brown Hall at the corner of Bluford and Laurel Streets. Coming soon, the Ticket Office will allow patrons the convenience of placing ticket orders online! The University Community can purchase tickets for all University sponsored events at this location. Open Monday through Friday 9am-6pm, the Ticket Office can be reached at 336.334.7749. Call today for all your University ticketing needs!



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## STUDENT LIFE

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### STUDENT DEVELOPMENT SERVICES

<http://www.ncat.edu/~studev/>

The Division of Student Affairs shoulders the major responsibility for Student Development Services. The Vice Chancellor for Student Affairs is the Chief Administrative Officer. The division is comprised of (15) fifteen departments assigned to major units that are supervised by the Executive for Budget Planning and Personnel Services, Executive Director for Student Development, Executive Director for Career Services, Executive Assistant to VC for Student Affairs, Executive Director of Housing, Dean of Students, Director for University Events, Executive Director for Auxiliary Services for Student Affairs, Executive Director for Orientation, First Year Experience and Director for Athletics.

Student Services Units at the University are organized for the purpose of providing programs and services that complement the academic mission of the University and contribute to the intellectual, social, moral, cultural, and physical development of students. These programs and services are designed to meet the expressed out-of-classroom needs of students while they pursue academic careers at the University.

Student Affairs work with students in areas of counseling, leadership development, student housing and student activities, student governance and community service. Such activities assist students in finding "a sense of belonging, responsibility, and achievement." The Division carries out its purpose through:

1. Providing leadership development opportunities for student leaders, the Student Government Association, the Student Union Advisory Board, the Counsel of Presidents, organizations such as NPHC sororities and fraternities, and service organizations.
2. Providing improved services for students that support their personal and social development.
3. Developing activities and programs that accommodate the special needs of off-campus, non-traditional and other.
4. Providing programs to accommodate the special needs of minority students.

Consistent with the overall goals of the University, Student Development Services include the following array of programs and activities: (1) Counseling Services, (2) Career Services, (3) Student Government Association, (4) Student Activities and Publications, (5) Health Services, (6) Intramural Sports, (7) Veteran and Disability Support Services, (8) Student Support Services, (9) Housing & Residence Life, (10) Memorial Student Union, (11) International Student Affairs, (12) Upward Bound Program, (13) Student Development, (14) Minority Affairs, (15) Ronald E. McNair Program, and (16) Judicial Affairs.

Some of the specific services are described as follows:

### COUNSELING SERVICES

<http://www.ncat.edu/~counsel>

The University makes provisions for counseling, testing and guidance for all students through Counseling Services, located in 108 Murphy Hall.

Counseling Services conducts a testing program for all freshman students. The results of this program are used to assist freshmen in the planning of their educational and vocational



careers. The Office conducts other testing programs that are required or desired by the departments of the University.

Counseling Services offers students the opportunity to discuss with a trained professional counselor or clinical psychologist any questions, dilemmas, needs, problems or concerns involving educational, career, social, personal or emotional adjustments that may occur during the college years.

The following is a list of services available through Counseling Services:

1. Individual and group personal counseling;
2. Academic and career counseling;
3. Individual test administration and interpretation covering the areas of intelligence, aptitude, personality, interest, achievement and other areas requiring special needs;
4. University Diagnostic and Placement Testing Program for all freshmen to assist in the planning of their educational and vocational careers and other programs required or desired by departments of the University;
5. College Level Examination Program (CLEP) for course credit by examination;
6. National Testing Program, which includes administration of the Graduate Record Examinations, PRAXIS Examinations, Graduate Management Admission Test, Veterinary College Admissions Test and other similar examinations;
7. Graduate student internship training laboratory;
8. Graduate school information and cooperation in the placement of graduates who desire to pursue graduate studies;
9. Withdrawal Exit Interview; and
10. Outreach counseling programs and activities.

All counseling is voluntary, free of charge, private and confidential.

## HEALTH SERVICES

<http://www.ncat.edu/~health>

A Director of Health Services manages the Sebastian Health Center. Medical services are available to all students in the student health center if they have paid the student health fee as part of their general university fee.

The basic components of the Health Service Program are as follows:

1. **Medical Services:** The University Physicians are in attendance in the Health Center daily (hours for routine treatment are posted) — and “On 24 hour call” for any emergency situations.
2. **Nursing Services:** Registered nurses, under the direction of the Nurse Supervisor, are in attendance daily to treat and evaluate students’ health needs and answer any questions pertaining to health problems and other concerns.
3. **Laboratory Services:** A Certified Medical Technologist is on duty daily, Monday – Friday to perform various laboratory tests as ordered by the physician to diagnose a variety of medical problems.
4. **Medical Records:** The Medical Records Director is responsible for maintaining a physically secure and confidential file of all student health records in the Health Center. Additionally, the North Carolina State Immunization Law stipulates required vaccines

must be on file in the medical records department of the Health Center prior to registration.

5. **Pharmacy Services:** A registered pharmacist is available Monday-Friday to dispense medication and provide patient teaching about all prescriptions filled.
6. **Health Education Services:** Prevention education is available through the health educator on a variety of health conditions. The Health Educator is available Monday-Friday to assist students with any health issues or concerns.

The Center provides up-to-date and emerging information on health related issues and concerns on a continuing basis for the University community.

## **DRUG AND ALCOHOL EDUCATION POLICY**

### **Preamble:**

The basic mission of North Carolina Agricultural and Technical State University is to provide an educational environment that enhances and supports the intellectual process. The academic community, including students, faculty and staff has the collective responsibility to ensure that this environment is conducive to healthy intellectual growth. The illegal use of harmful and addictive chemical substances and the abuse of alcohol pose a threat to the educational environment. Thus, this Drug and Alcohol Education Policy is being applied to assist members of the University community in their understanding of the harmful effects of illegal drugs and alcohol abuse; of the incompatibility of illegal drugs and the abuse of alcohol with the educational mission of the University; and of the consequences of the use, possession or sale of such illegal drugs and the abuse of alcohol, including the violation of applicable laws.

### **Objectives:**

- I. To develop an educational program that increases the University community's knowledge and competency to make informed decisions relative to the use and abuse of controlled substances and alcohol; and
- II. To increase those skills and attributes required taking corrective action conducive to the health and well being of potential drug and alcohol abusers.

### **Program Components:**

There are five (5) components to this policy:

- I. Education
- II. Health Risks
- III. Rehabilitation
- IV. Sanctions
- V. Dissemination and Review

## **I. EDUCATION**

It is the intent of the Drug and Alcohol Education Policy of North Carolina Agricultural and Technical State University to insure that all members of the University community (i.e. students, faculty, administrators and other employees) are aware that the use, sale and/or possession of illegal drugs and the abuse of alcohol are incompatible with the goals of the University. Moreover, each person should be aware that the use, sale or possession of illegal drugs and the abuse of alcohol are, as more specifically set forth later in this policy, subject to specific sanctions and penalties.

All members of the University family are reminded that in addition to being subject to University regulations and sanctions regarding illegal drugs and the abuse of alcohol, they are also subject to the laws of the state and of the nation. Each individual is also reminded that it is not a violation of “double jeopardy” to be subject to the terms of this policy as well as the provisions of the North Carolina General Statutes. For a listing of relevant state criminal statutes, please see Appendix A. Further questions may be directed to the Office of the University Attorney or the Office of Student Affairs.

Each member of the University community is asked to pay particular attention to the full consequences of the sanctions specified in this policy as well as the consequences of the North Carolina criminal law referenced above. Certain violations may jeopardize an individual’s future as it relates to continued University enrollment or future employment possibilities, depending on individual circumstances.

Further, it is a policy of the University that the educational, legal and medical aspects of this issue be emphasized on an annual basis through the provision of programs and activities in the following areas:

- (a) Annual Drug and Alcohol Education Week - Workshops and seminars on drug abuse led by former drug addicts and community agencies such as MADD, SADD, and the Sycamore Center;
- (b) Drug and Alcohol Awareness Fair - Exhibits featuring drug and alcohol related paraphernalia;
- (c) Media presentations on the University radio station, WNAA, emphasizing the most current programs with drug and alcohol education messages;
- (d) “Home for the Holidays, Don’t Drink and Drive”; Drug and Alcohol Abuse Prevention Campaign;
- (e) Publication of brochure on drug education;
- (f) Continuous monthly outreach programs in each residence hall.

Although directed primarily to the student population, the above noted educational programs shall also open to participation by all categories of University employees.

Additionally, the Staff Development Office is the designated University department responsible for the planning and implementation of drug and alcohol education programs geared toward the special needs of the faculty and staff. Among the programs to be implemented by the Staff Development Office are lunchtime seminars jointly conducted by the Sycamore Center, the Greensboro Police Department and the Guilford County Mental Health Department.

## **II. HEALTH RISKS**

Health risks, associated with the use of illicit drugs and the abuse of alcohol, are wide ranging and varied depending on the specific substance involved and individual abuse pattern. These risks include, but are not limited to:

1. Physical changes which alter bodily functions such as severely increased or decreased cardiac output; shallow to irregular respiration; and damage to other major organs, such as kidney, liver and brain;
2. Emotional and psychological changes including paranoia, depression, hostility, anxiety, mood swings and instability;

3. Additional health risks could include such illnesses as AIDS HIV infection, sexually transmitted diseases, severe weight loss, cancer, cirrhosis, hepatitis, short-term memory loss, seizures, and deformities to unborn children;
4. Physical and psychological dependency (addiction); and
5. Death from overdose or continuous use.

While these health risks are broad in range, persons consuming illicit drugs and alcohol will exemplify some, if not all, of the above symptoms. See Appendix A for a list of a few specific drugs and their corresponding health risks.

### III. REHABILITATION

The University recognizes that rehabilitation is an integral part of an effective drug and alcohol policy. Consistent with its commitment in the areas of education and sanctions, it is the University's intent to provide an opportunity for rehabilitation to all members of the University family. This commitment is evidenced through access to existing University resources and is furthered by referrals to community agencies.

#### **Students:**

The University Counseling Center and the Student Health Center are available to provide medical and psychological assessments of students with drug/alcohol dependency and drug/alcohol abuse problems. Based on the outcome of this assessment, treatment can be provided by either or both of these centers. If, however, the scope of the problem is beyond the capability of these Centers, affected students will be referred to community agencies, such as the Guilford County Mental Health Center and Greenpoint. The cost of such services shall be the individual's responsibility.

#### **Employees:**

Referrals to local community agencies will be made available to include the Guilford County Mental Health Center, Greenpoint and private physicians. The cost of such services will be the individual's responsibility. The services of the University's Counseling and Health Centers are not normally utilized by faculty and staff members except in emergency situations.

### IV. SANCTIONS

#### **A. Illegal Drugs/Prohibited Conduct**

All members of the University community have the responsibility for being knowledgeable about and in compliance with the provisions of North Carolina law as it relates to the use, possession or sale of illegal drugs as set forth in Article 5, Chapter 90 of the North Carolina General Statutes. Any violations of this law by members of the university family subjects the individual to prosecution both by University disciplinary proceedings and by civil authorities. It is not a violation of "double jeopardy" to be prosecuted by both of these authorities. The University will initiate its own disciplinary proceedings against a student, faculty member, administrator or other employee when the alleged conduct is deemed to affect the interests of the University.

Penalties will be imposed by the University in compliance with procedural safeguards applicable to disciplinary actions against students (see the *Student Handbook*), faculty members (see the *Faculty Handbook*), administrators (see the Board of Governors Policies Concerning Senior Administrative Officers as well as the EPA Non-Teaching Personnel Policies) and SPA employees (see *State Personnel Commission Policies*).



The penalties imposed for such violations range from written warnings with probationary status to expulsion from enrollment and discharges from employment. However, minimum penalties that apply for each violation are listed in Appendix A. For additional information, direct questions to the Office of the University Attorney or the Office of Student Affairs. It should be noted that where the relevant sanction dictates a minimum of one semester suspension from employment, the regulations of the State Personnel Commission (as pertaining to SPA employees) do not permit suspension from employment of this duration. Thus, such sanction as applied to SPA employees dictates the termination of employment.

## B. Alcohol/Prohibited Conduct

### 1. Employees:

While the sale, possession, or consumption of alcoholic beverages is not illegal under state or federal law, it is, hereby, the policy of North Carolina Agricultural and Technical State University that the consumption of alcohol sufficient to interfere with or prohibit the otherwise normal execution of job responsibilities is improper and subjects the employee to appropriate disciplinary procedures. It is also the policy of North Carolina Agricultural and Technical State University that alcoholic beverages not sold on campus. Employees violating the above noted policies are subject to appropriate disciplinary procedures, which range from warning and probation to dismissal consistent with the individual circumstances.

Similarly, employees are reminded that, under N.C. law, it is illegal to sell or give malt beverages, unfortified wine, fortified wine, spirituous liquor or mixed beverages to anyone less than 21 years old. It is also illegal to aid and abet any person less than 21 years old in the purchase or possession of the alcoholic beverages noted above. Employees found violating these state laws are subject to legal sanction as well as the appropriate disciplinary procedures.

### 2. Students:

Students are reminded of the following University regulations and state laws regarding alcoholic beverages as contained in the Student Handbook:

#### 1. Students are liable for violation of State Law GS 18B-302 while on University premises: 18B-302 Sale to or Purchase by Underage Persons

##### a. Sale – It shall be unlawful for any person to:

- I. Sell or give malt beverages or unfortified wine to anyone less than 21 years old; or
- II. Sell or give fortified wine, spirituous liquor, or mixed beverages to anyone less than 21 years old.

##### b. Purchase or Possession - It shall be unlawful for:

- I. A person less than 21 years old to purchase, to attempt to purchase, or to possess malt beverages or unfortified wine; or
- II. A person less than 21 years old to purchase, to attempt to purchase, or possess fortified wine, spirituous liquor, or mixed beverages.

##### c. Aider and Abettor

- I. By Underage Person - Any person under the lawful age to purchase and who aids or abets another in violation of subsection (a) or (b) of this

section shall be guilty of a misdemeanor punishable by a fine of up to five hundred dollars (\$500.00) or imprisonment for not more than six months, or both, at the discretion of the court.

- II. By Person over Lawful Age - Any person who is over the lawful age to purchase and who aids or abets another in violation of subsection (a) or (b) of this section shall be guilty of a misdemeanor punishable by a fine of up to two thousand dollars (\$2,000) or imprisonment for not more than two years, or both, at the discretion of the court.

1. Students are responsible for conforming to state laws pertaining to:
  - a. Transportation of alcoholic beverages
  - b. Consumption of alcoholic beverages in public places
  - c. Consumption of alcoholic beverages by students under the legal age
  - d. Abuses of alcoholic beverages
2. There will be no consumption of alcoholic beverages in a motor vehicle while on University property or on University streets.
3. Personal consumption of alcoholic beverages is restricted to students' rooms in residence halls, if they are of legal drinking age.
4. The possession or consumption of alcoholic beverages shall not be permitted in public places, such as lounges, game rooms, study rooms, kitchens, laundries or patios.
5. There will be no public display of alcoholic beverages.
6. The University discourages the drinking of alcoholic beverages, and other abuses of alcoholic beverages. Being under the influence of alcohol is considered a breach of conduct, and students who violate these standards are subject to disciplinary action.

Violations of the above regulations and laws will subject students to criminal prosecution as well as campus-based charges.

#### C. Suspension Pending Final Disposition

The University reserves the right through the Chancellor or his designee to suspend a student, faculty member, administrator and other employee between the time of the initiation of charges and the hearing to be held. Such decision will be made based on whether the person's continued presence within the University community will constitute a clear and immediate danger or disruption to the University. In such circumstances the hearing will be held as promptly as possible.

### V. DISSEMINATION

A copy of the Drug and Alcohol Education Policy will be distributed on an annual basis to each employee and student of the University. The distribution to all enrolled students will occur as a part of the registration process. The University Personnel Office will administer the distribution to University employees.

The Chancellor of the University shall insure on a biennial basis that this policy is reviewed for purposes of assessing its effectiveness, consistency of application of sanctions and to determine the necessity for modification. This review shall be conducted by October 15 of every other year, beginning in 1992.

## **CONCLUSION**

North Carolina Agricultural and Technical State University recognizes that the use of illegal drugs and the abuse of alcohol are a national problem and that sustained efforts must be made to educate the University family regarding the consequences associated with drug and alcohol abuse. The primary emphasis in this policy has therefore been on providing drug and alcohol abuse counseling and rehabilitation services through the various programs and activities outlined above.

Past experience suggests that most members of the University family are law abiding and will use this policy as a guide for their future behaviors and as a mechanism to influence their peers and colleagues in a positive direction. However, those who choose to violate any portions of this policy will pay the penalty for non-compliance. The main thrust of this policy has been to achieve a balance between its educational and punitive components.

The effective implementation of this policy rests on its wide dissemination to all members of the University family. This will be accomplished by the dissemination procedure previously outlined and through its publication in the *Faculty Handbook*, *Student Handbook* and *University Catalogue*. All affected individuals can be assured that applicable professional standards of confidentiality will be maintained at all times.

## **FOOD SERVICES**

The University provides food services for students at a reasonable cost. Several snack bar options are located in the Memorial Student Union Building. Students who live in the residence halls are required to purchase a meal plan; several options are available (minimum 10/week). Students who live off campus may also purchase meals or a meal plan.

## **HOUSING AND RESIDENCE LIFE**

<http://www.ncat.edu/~housing/>

The Department of Housing and Residence Life exists as an integral part of the educational program and academic support services of North Carolina Agricultural and Technical State University.

Its mission includes providing a good living and learning environment and related educational programs which support the educational goals of our students and the University.

## **MEMORIAL UNION**

<http://www.ncat.edu/~memorial>

The Memorial Union functions as the "Community Center" for the University and its constituency by providing a variety of services and activities. The "Union" building encompasses over 45,000 square feet of space and serves as the headquarters for the Student Government Association, the Student Union Advisory Board, the Office of Student Activities, Aggie Escort Service, The Yearbook Office and the Commuter Student Center. Additionally, the Memorial Student Union offers room accommodations for small group meetings or large banquet activities, lounge areas, self-service vending, the "restaurant" snack bars, a game room, and the Information Center.

A primary goal of the Memorial Student Union is to promote an involved community through its various services, facilities, and programs. The Union's location in the heart of the north campus provides a co-curricular community for students, faculty members, alumni,



and guests served by the university. The programming and recreational activities of the Student Union Advisory Board have a unique focus on the cultural and social development of the student community.

## STUDENT ORGANIZATIONS AND ACTIVITIES

<http://www.ncat.edu/~studev/>

The University provides a well-balanced program of activities for moral, spiritual, cultural and physical development of its students. Religious, cultural, social and recreational activities are sponsored by various committees, departments, and organizations of the University. Outstanding artists, lecturers and dramatic productions are brought to the campus.

The Office of the Vice Chancellor publishes a listing of student organizations, their purposes, objectives, chief officers, and advisors annually for Student Development. This document is available upon request by this office located in Murphy Hall Room 102.

## AGGIE PRIDE COMPACT

**Achieving Great Goals In Everything – Producing Renowned Individuals  
Dedicated To Excellence**

The essence of *Aggie Pride* is manifested in standards depicting what it truly means to be a responsible member of The North Carolina Agricultural and Technical State University Family. These standards provide the impetus and inspiration, which motivate students, faculty, staff, administrators, and trustees alike in their perpetual commitment to excellence. North Carolina Agricultural and Technical State University has a unique legacy of nurturing individual students to realize their fullest potential.

North Carolina Agricultural and Technical State University is a learner-centered community that develops and preserves intellectual capital through interdisciplinary learning, discovery, engagement, and operational excellence. As members of the university community, all stakeholders share a pervasive sense of trust, pride, and allegiance in ensuring the preeminent status of North Carolina Agricultural and Technical State University in a global society. The following standards define the essence of *Aggie Pride*:

*Aggie Pride* is consistently communicating and behaving in a manner that displays integrity, honesty, sound character, and virtuous ethics. **(Values)**

*Aggie Pride* is expecting and achieving success and setting high standards in all personal and professional ventures. **(Achievement)**

*Aggie Pride* is taking a personal stand to positively affect the continuous growth, development and enhancement of the University at large. **(Commitment)**

*Aggie Pride* is accepting and demonstrating a steadfast commitment to learning by taking responsibility through personal and professional development. **(Self-determination)**

*Aggie Pride* is striving to significantly influence the development of individuals of all ages within and beyond our community to become lifelong learners. **(Lifelong Learning)**

*Aggie Pride* is exhibiting a positive and willing attitude to unselfishly serve and to pledge ones talents and gifts for the betterment of North Carolina Agricultural and Technical State University and the larger world community. **(Service)**

*Aggie Pride* is contributing to the establishment and maintenance of a safe, clean, and aesthetically appealing campus with a favorable ecosystem. **(Building Community)**



*Aggie Pride* is exhibiting a relentless desire and commitment to treat all individuals with a high level of appreciation and respect and to expect the same in return. **(Respect)**

*Aggie Pride* is effectively representing the University by utilizing personal knowledge, skills, and resources. **(Confidence)**

*Aggie Pride* builds on the past, maintains the present, and accepts the challenges of the future while providing our personal financial resources to preserve our legacy and ensure our future. **(Legacy)**

Therefore, as a member of the North Carolina Agricultural and Technical State University family, I unconditionally accept the obligation entrusted to me to live my life according to the standards set forth in this Compact. By my words and actions, I commit to *Aggie Pride* and the pursuit of excellence for myself and for my university.

## **STUDENT CONDUCT**

Students enrolled at North Carolina Agricultural and Technical State University are expected to conduct themselves properly at all times. They are expected to observe standards of behavior and integrity that will reflect favorably upon themselves, their families, and the University. They are further expected to abide by the laws of the city, state, and nation, and by all rules and regulations of the University.

Accordingly, any student who demonstrates an unwillingness to obey the rules and regulations that are prescribed or that may be prescribed to govern the student body will be placed on probation, suspended or expelled from the institution.

A student may forfeit the privilege of working for the University when, for any reason, he or she is placed on probation because of misconduct.

## **COMPUTER USE POLICY STATEMENT**

Students of North Carolina A&T State University are authorized to use computer networks, equipment and related resources pursuant to administrative regulations established and promulgated by the Chancellor or his/her designee. All students are expected to follow the computer use policy and related University rules, regulations and procedures for computer usage and work produced on computing equipment, systems, and networks of the university. Students may access these technologies for personal use on a restricted basis.

Please refer to the Computing and Networking Usage Policy and Lab Usage Policy at the [www.ncat.edu/~cit/policies/](http://www.ncat.edu/~cit/policies/) for permissible use. Any violation of these policies is considered "misconduct" subject to the University's disciplinary procedures. Sanctions for violation of this policy may include revocation or suspension of computer access privileges in addition to any other sanction permitted under student conduct and academic policies. Violations of state or federal laws may also be referred to the appropriate authorities for criminal or civil action. Students are encouraged to contact the Client Services Department or the Aggie Helpdesk for information regarding any computer usage matters.

## **VETERAN AFFAIRS**

<http://www.ncat.edu/~ovdss/>

North Carolina Agricultural and Technical State University is an approved site for veterans and veteran dependents wishing to attend and receive educational benefits.

Persons wishing to attend the University under the Veterans Administration Educational Training Program should apply to the Veterans Administration for a Certificate of Eligibility.

Simultaneously, they should apply for admission to North Carolina Agricultural and Technical State University through normal admissions procedures. The issuing of a Certificate of Eligibility by the Veterans Administration does not automatically assure a student of admission to the University.

The Office of Veterans Affairs located in Suite 005, Murphy Hall has been established to assist veterans and veteran dependents with enrollment and adjustment to college life. Upon enrolling at the University, the veteran or eligible person should report to the Office of Veterans Affairs so that verification of enrollment can be sent to the Veterans Administration. If a Certificate of Eligibility has not been issued, the veterans or the eligible person should see the University Certifying Official.

The Office also provides counseling and tutorial services as necessary.

### **DISABILITY SUPPORT SERVICES**

<http://www.ncat.edu/~ovdss/>

The Office of Disability Support Services assures ready accessibility of all academic programs, services, and activities to any person with a documented disability matriculating at the University. Likewise, services focus on facility accessibility and safety.

The office staff serves as a liaison for students with disabilities as they participate in programs and activities enjoyed by all students. The office staff arranges for any necessary reasonable accommodations or academic adjustments. Documentation is required for all disabilities.

All information and services for persons with disabilities are confidential. The office is located in Suite 005 Murphy Hall. Students needing academic adjustments or accommodations must be registered with this office.

### **OFFICE OF CAREER SERVICES**

<http://www.careerserv.ncat.edu>

The primary mission of the Office of Career Services at North Carolina Agricultural and Technical State University is to provide centralized, comprehensive and progressive programs, services and resources designed to prepare students to successfully pursue meaningful career opportunities. Continuous career development assistance is also available to alumni of the University. Individuals who are formally enrolled in a degree program at North Carolina Agricultural and Technical State University or who are A&T graduates are eligible to use the facilities, programs and services of the Office of Career Services. These services include the following:

#### **Student Employment Programs**

*Cooperative Education Program (Co-op)* is an optional, counseling-centered program that offers students the opportunity to alternate periods of academic study with periods of work closely related to their major fields of study. The program is non-compulsory; however, the University urges students to consider co-op a viable alternative to gain work experience before graduation. Students who (1) maintain at least a 2.0 overall grade point average, (2) have completed the freshman year, (3) show intent to matriculate and graduate within a four-to-five year period, and (4) are willing to commit to a mutually agreed upon work schedule are eligible to compete for positions. Transfer and graduate students are also eligible for co-op after completing one semester of successful full-time study. Interested students must be

registered with the Office of Career Services and closely match the qualifications requested by the employer. Selections are made by the employer with appropriately weighted consideration given to academic standing, skills and interest in the work to be performed.

While on work assignment, students are considered to be “full-time” and in good standing; however, they may not be enrolled in courses unless they are applying for academic credit. Participants are expected to work two to three times before they graduate and at least one work period should be scheduled other than a summer session. Students who co-op during the fall or spring semester is assessed a \$30 administrative fee by the University, which is due and payable during the semester of work. In addition, students desiring academic credit for assignments must register through their respective academic departments and pay the required tuition. Please contact the Assistant Director of Career Services for Experiential Learning with inquiries and questions.

**Part-time employment** opportunities are posted as received in the Office of Career Services. These jobs provide local and regional opportunities for students who are interested in supplemental income during the school year. Students are responsible for making the appropriate contacts and following through with prospective employers.

**Summer internships** offer students the opportunity to gain work experience in industry and government. These positions are offered during the summer and are highly competitive. For companies that do not actively interview during the recruiting season, applications and announcements are available in the Office and online. Opportunities are also available for participation in The Institute of Government and the North Carolina State Government Internship Program. INROADS actively recruits at the University. Interested students must meet the criteria and qualifications established by INROADS and the sponsoring employers.

### **Permanent Career Options**

**On-campus Recruitment** is available to students and alumni of North Carolina Agricultural and Technical State University. Opportunities are available in the local, state, national and international arenas. North Carolina Agricultural and Technical State University observes October 1 through November 30 as the official on-campus recruiting period for the fall semester. During the spring semester, interviews can be scheduled between late January and mid-April. There is no recruiting during the months of May through September nor during the month of December. The Office of Career Services publishes a Recruiting Bulletin on the 1<sup>st</sup> and 15<sup>th</sup> of each recruiting month. This bulletin is also available on-line. Students/Alumni must be registered with the Office of Career Services before they are allowed to interview.

**Alumni** are eligible to participate in the referral service. They must update their on-line registration each semester. If alumni wish to schedule interviews, they must observe the policy regarding the two business days waiting period.

**The Job Listing Service** exposes graduating seniors, graduate students and alumni to thousands of job opportunities available nationwide. Job listings are available on-line.

### **Awareness Programs/Career Fairs**

In addition to the recruitment function, the Office of Career Services is actively involved in exposing A&T students to career opportunities and professionals in various career fields. This is accomplished through annual career awareness programs, workshops and information sessions. The annual programs include the following:



**Career Awareness Program** is held in September to give students an opportunity to network with more than 200 companies/agencies to find out services/products produced, majors being sought, and opportunities available (permanent, summer, co-op).

**Graduate & Professional School Career Day** is usually held in the fall semester and allows students an opportunity to broaden their knowledge of post-baccalaureate and post-graduate degrees. This career day is attended by graduate and professional schools from across the United States.

**Career Day for Nurses** is jointly sponsored by the Office of Career Services at A&T and UNC-G and the Schools of Nursing at A&T and UNC-G. This day provides an opportunity for students to increase their awareness of the types and availability of careers in health services.

**Career Day for Teachers** is held during the spring semester and is specifically designed to assist education majors. School systems from across the country attend to discuss opportunities in teaching and administration.

**N.C. State Government Day** is set aside for agencies to come to the campus during the spring semester to discuss career opportunities within state government.

**Greensboro Area Business Career Day** is held during the spring semester. This event serves as an opportunity for students to interact with local businesses about career opportunities.

### **Additional Services**

**The Office of Career Services** hosts *workshops, seminars, counseling sessions, classroom presentations, and information sessions* on a regular basis. Representatives of industry also schedule general information sessions the evening before they interview prospective candidates.

**Career Resources Library** is a collection of career literature. Companies/agencies conducting on-campus interviews have current literature available in the Office of Career Services. Links to companies/agencies Websites can be accessed through Career Services Web Page. The Office provides a video library and has individual VCR capabilities for viewing.

**On-line registration and job search information** is also available in the office for interested students and alumni. Career Services' on-line services can be accessed on the Internet at [www.careerserv.ncat.edu](http://www.careerserv.ncat.edu)

### **MINORITY STUDENT AFFAIRS**

<http://www.ncat.edu/~minority/>

The Office of Minority Student Affairs was created in order to assist minority (Native American, Caucasian and Hispanic/Latino) students in the development and accomplishment of their educational goals. North Carolina A&T State University welcomes people of all races to its campus. Supporting the Office of Minority Student Affairs is one way in which the University has dedicated itself to building bridges of knowledge, cooperation and understanding between persons of differing ethnic and social backgrounds. Housed in Suite 219 of the Memorial Union, Minority Student Affairs is open from 8:00 a.m. to 5:00 p.m. and is staffed by the Director and Secretary.

Minority students represent approximately 11% of the student population; this means about 875 minority students are enrolled at North Carolina A&T State University. Efforts to serve our students are designed to increase the retention and graduation of minority students



through activities, newsletters, workshops, mentoring programs, surveys, counseling, and a variety of program outreach services that focus on personal development and campus involvement.

The Minority Student Association offers leadership opportunities, social and service activities for minority students, often in cooperation with other campus organizations.

## **OFFICE OF INTERNATIONAL STUDENTS AND SCHOLARS**

<http://www.ncat.edu/~isa>

The Office of International Students and Scholars (OISS) provide services and programs for international (foreign-born) students and scholars. The office staff provides assistance with pre-arrival preparation, arrival/adjustment assistance, the admission process, housing, insurance, and immigration matters. Orientation and advisement are provided to assist students with their adjustment to the University and community. In cooperation with various departments and organizations, including the International Student Association, the office provides activities that enhance cultural, social and personal development. The Association is open to all international students and scholars with an interest in the goals of the organization. Registration with the Office of International Students and Scholars is required.

Students and scholars are encouraged to promote multicultural understanding by participating in a variety of activities in the Greensboro community.

Approximately two hundred and eighty international students attend the University and they represent over 50 countries in the following regions: Africa, Asia, Caribbean/West Indies, Central America, Europe, Middle East, North America, and South America.

All international (foreign-born) students are required to verify their immigration/residency status to the International Students and Scholars Office before registering at the University and notify the Office immediately of any change in their immigration status and address.

All F-1 non-immigrants are required to obtain an I-20 [Certificate of Eligibility for Non-immigrant Student Status for Academic and Language Students] from this institution prior to enrollment. (I-20's issued by another institution are not valid for attendance at A&T). The requirements for an I-20 include acceptance to the University, a TOEFL score of 550 or above; a financial guarantee (letter of support, bank statement and verification of salary from sponsor's employer); and a deposit for the first year's tuition and fees. Proof of valid immigration status is required if the applicant is currently residing in the United States. Individuals seeking J-1 status should contact the OISS Director prior to submission of the application for current immigration regulations and University procedures. Possession of a social security card does not necessarily mean a student is eligible to work off-campus.

Immigrants must provide the International Students and Scholars Office with a copy of their Permanent Resident Card. Foreign-born U.S. Citizens are encouraged to register with the Office and submit a copy of their U.S. Naturalized Citizen Certificate. All other applicants should provide the documents necessary to verify current immigration status. Information received helps the Office with statistical reports on the international student population, maintaining a cultural resource base and international student advising.

All non-immigrants are required to attend the International Student Orientation held during the registration period. The immigration law requires F-1 non-immigrants to complete their registration with the International Students and Scholars Office within 15 days after classes begin.

All non-immigrants are responsible for maintaining their legal immigration status. Non-immigrant students in F-1 visa status are required by United States Immigration regulations to enroll full-time, except for the summer terms. Full-time enrollment is defined as enrollment every semester in a minimum of 12 credit hours. F-1 non-immigrants are not eligible to work off-campus without approval from the U.S. Immigration and Naturalization Service. F-2 and H-4 non-immigrants are not eligible to work.

The legal regulations governing non-immigrant students are complex. The Director of the International Students and Scholars is available to explain these regulations in detail and strongly urge non-immigrants to seek advice about their legal immigration status.

It is mandatory for students and scholars on F and J visas to maintain comprehensive health and accident insurance coverage that includes repatriation and medical evacuation. In addition, the policy must have specific levels of coverage to ensure that it is adequate to provide for medical costs in the U.S. Students are advised not to purchase insurance policies prior to arrival unless they cover the period from departure until enrollment in a new policy at the University. Government sponsored students and students with pre-existing medical conditions who have insurance should not cancel their insurance in order to purchase the plan available through the University. These students should consult with the Director of International Students and Scholars in regards to their coverage.

Any F or J non-immigrant who fails to provide proof of adequate insurance by the end of the regular registration period to the Director of International Students and Scholars will be billed for the insurance plan available through the University.

F and J visa holders are considered as non-residents and are assessed non-resident (out-of-state) fees.

The office is located in Murphy Hall, Room 221, at the corner of Nocho Street and S.G. Thomas Drive. The telephone number is (336) 334-7551; the fax number is (336) 334-7001. Mrs. Sharon R. Martin is the Director of the International Students and Scholars Office and Adviser to the International Student Association. Mrs. Martin's e-mail address is [martins@ncat.edu](mailto:martins@ncat.edu). The University's homepage address is <http://www.ncat.edu>.

Application packets for international students are available in the International Students and Scholars Office and the Admissions Office.

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## EXPENSES AND FINANCIAL AID

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### GENERAL INFORMATION

North Carolina Agricultural and Technical State University is a publicly supported institution. Tuition payments and other required student fees meet only a part of the total cost of the education of students enrolled. On the average, for each full-time student enrolled in an institution of the University of North Carolina, the State of North Carolina appropriated \$8,558 per year in public funds to support the educational programs offered.

The University reserves the right to increase or decrease all fees and charges as well as add or delete items of expense without advance notice as circumstances, in the judgment of the administration, may require.

Boarding and lodging fees are based on the actual number of days school is in session and do not include holidays, breaks, or any other University vacations.

Students' property in dormitories and other University buildings is at the sole risk of the owner, and the University is not responsible for loss, theft, or damage to such property arising from any cause.

Students are required to pay for any loss or damage to University property at replacement cost due to abuse, negligence, or malicious action, in addition to being subject to disciplinary action.

The University converted to a book purchase system effective fall semester, 1991. All undergraduate and graduate students are required to purchase all textbooks. This includes hard cover and paperback textbooks. The cost will vary according to academic discipline. Other policies and procedures governing the book purchase system can be obtained from the Bookstore.

Personal spending money should be sent directly to and made payable to the student in the form of money orders or certified checks. As a policy, the University does not cash personal checks for students in any amount.

Diplomas and transcripts are withheld until the student has paid in full all fees and charges due the University. A student in debt to the University in any amount will not be permitted to register for any subsequent semester until his or her obligations are paid. If special financial arrangements have been made, failure to comply with these arrangements as stipulated will result in the student being withdrawn from the University for nonpayment of required fees.

### **Special Notice to Veterans**

Veterans attending school under the provisions of Public Law 89-358 receive a monthly subsistence allowance from the Veterans Administration. Therefore, veterans are responsible for meeting all of their required fee obligations.

Veterans attending school under the provision of Public Law 894 (Disabled Veterans) receive a monthly subsistence allowance from the Veterans Administration and also the Veterans Administration pays directly to the school the cost of the veteran's tuition and required fees. All other fees are the responsibility of the veteran.

Veterans may contact the Veteran and Disability Support Services Office on Campus for any special consideration which may be available.



## REQUIRED DEPOSITS, CHARGES AND FEES

All registration fees and charges are due and payable in full before or at the beginning of registration for each semester. Payments made by mail must be postmarked 5 days before the due date for each semester.

ALL PAYMENTS MUST BE MADE BY PERSONAL CHECK, CERTIFIED CHECK, BANK WIRE, MONEY ORDER, or CASH. American Express, Mastercard and Visa are also accepted in person or by going to [www.ncat.edu](http://www.ncat.edu) and clicking on Aggie Access On-Line. You must have a Personal Identification Number (P.I.N.) to pay on-line. Checks, drafts, and money orders must be made payable to North Carolina Agricultural and Technical State University, and sent directly to:

**Treasurer's Office**  
**Dowdy Administration Building**  
**North Carolina Agricultural and Technical State University**  
**1601 East Market Street**  
**Greensboro, NC 27411**

**PLEASE DO NOT SEND CASH PAYMENTS BY MAIL!**  
**A \$35 NON-REFUNDABLE APPLICATION FEE IS REQUIRED**  
**OF ALL APPLICANTS.**

### HOUSING DEPOSIT

Housing and Residence Life at North Carolina Agricultural and Technical State University provides a reasonably priced, attractive, comfortable, clean, and safe environment.

Residency options include: single and double occupancy, with co-educational facilities and single gender facilities.

The interdisciplinary living and learning community is composed of traditional residence halls and planned living and learning communities. This provides a setting where students may find a sense of identification, belonging, responsibility and achievement that will prepare them for future roles of leadership and service.

Students interested in living on-campus should complete a Housing Application indicating housing preference of Aggie Suites or Residence Hall and include a \$150 non-refundable programming/processing fee. The application and fee should be returned to the Office of Housing and Residence Life, North Carolina A&T State University, 1601 Market Street, 226 Murphy Hall, Greensboro, NC 27411. Applications will not be processed without the \$150 fee attached.

**Charge Category** — UNDERGRADUATE DAY STUDENT (Student Living Off Campus). **Payment** — Each Semester. **Residence Status** — **In-State** - \$1,315.00. **Out-of-State** — \$5,775.50. **GRADUATE DAY STUDENT** (Student Living Off Campus). **Payment** — Each Semester. **Residence Status** — **In-State** - \$1,349.50 **Out-of-State** — \$5,893.00. **Charge Category** — UNDERGRADUATE BOARDING ONLY STUDENT (Student Living Off Campus but taking meals on campus). **Payment** — Each Semester. **Residence Status** — **In-State** - \$2,365.00. **Out-of-State** — \$6,825.00. **GRADUATE BOARDING ONLY STUDENT** (Student Living Off Campus but taking meals on campus). **Payment** — Each Semester. **Residence Status** — **In-State** - \$2,399.50. **Out-of-State** — \$6,943.00. **Charge Category** - BOARDING AND LODGING STUDENT (Student Living On Campus. NOTE: All Residence Hall Students must take meals in the University Dining Hall and participate in the student accident insurance program, however, the cost of this insurance is covered by our current lodging fee. **Payment** — Each Semester. **UNDERGRADUATE STUDENT Residence Status** — **In-State** — \$3,637.50. **Out-of-State** — \$8,098.00. **GRADUATE STUDENT Residence Status** — **In-State** — \$3,672.00. **Out-of-State** — \$8,215.00



## MAILBOX KEY DEPOSIT

The centralized Mail Center houses mailboxes for all lodging students. Box numbers are assigned and are retained during the length of time students reside in residence halls. No fee is charged for this service; however, a key deposit of \$10 is required and is refundable when the key is returned at the end of the enrollment period or upon withdrawal from campus housing. This \$10 mailbox key deposit is included in the fee schedule for lodging students.

## REGULAR SESSION CHARGES FOR PART-TIME STUDENTS

### NORTH CAROLINA STUDENT RATES

#### UNDERGRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-5	\$183.75	\$127.00	\$310.75
6-8	\$367.50	\$392.00	\$759.50
9-11	\$551.25	\$580.00	\$1,131.25
12 or more	\$735.00	\$580.00	\$1,315.00

#### GRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-2	\$192.50	\$ 90.00	\$282.50
3-5	\$384.75	\$147.00	\$531.75
6-7	\$577.25	\$204.00	\$781.25
8	\$577.25	\$580.00	\$1,157.25
9 or more	\$769.50	\$580.00	\$1,349.50

### OUT-OF-STATE STUDENT RATES

#### UNDERGRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-5	\$1,299.00	\$127.00	\$1,426.00
6-8	\$2,597.75	\$392.00	\$2,989.75
9-11	\$3,896.75	\$580.00	\$4,476.75
12 or more	\$5,195.50	\$580.00	\$5,775.50

#### GRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-2	\$1,328.25	\$ 90.00	\$1,418.25
3-5	\$2,626.50	\$147.00	\$2,803.50
6-7	\$3,984.75	\$204.00	\$4,188.75
8	\$3,984.75	\$580.00	\$4,564.75
9 or more	\$5,313.00	\$580.00	\$5,893.00

(Boarding and Lodging Per Semester) - \$2,322.50

## INCIDENTAL FEES, DEPOSITS, AND CHARGES:

Accident Insurance (Optional)	\$55.00	Motor Vehicle Registration - Regular Student	\$100.00
Application Fee (Non-Refundable) No		Practice Teaching, Practicum Internship	60.00
Credit on Account	35.00	Regalia Fee - Graduate	30.00
Bowling Course Fee	11.00	Regalia Fee - Undergraduate	15.00
Chemistry Laboratory Breakage Fee	5.00	ROTC Uniform Deposit	25.00
Breakage Deposit	10.00	Air Force (Refundable)	25.00
Cooperative Education Adm. Fee	30.00	ROTC Uniform Deposit-Army (Refundable)	10.00
Diploma - Graduate	35.00	Room Application Fee	150.00
Diploma - Undergraduate	35.00	Parking Fee Violations	2.00-25.00
Identification Card Replacement Fee	20.00	Transcript Fee	2.00
Key Replacement Fee	10.00	USAID Sponsored Student Adm. Fee	
Late Registration Fee	20.00	Per Semester	200.00
Master's Thesis Binding Fee	25.00	Visiting Auditor Course Fee	25.00
Motor Vehicle Registration -		Orientation Fee - Freshmen &	10.00
Evening Student	30.00	Orientation Transfer Students	10.00
		Mail Box Key Deposit (Refundable)	10.00

## TWENTY-FIVE PERCENT (25%) TUITION SURCHARGE

The 1993 Regular Session of the General Assembly enacted a special provision directing the Board of Governors to impose a 25% tuition surcharge on students who take more than 140 degree credit hours to complete a baccalaureate degree in a four year program or more than 110% of the credit hours necessary to complete a baccalaureate degree in any program officially designated by the Board as a five-year program. Effective with the fall 1994 semester, all new undergraduates seeking a baccalaureate degree at North Carolina Agricultural and Technical State University are subject to this tuition surcharge. The surcharge cannot be waived for out-of-state students and does not apply to required fees. The calculation of these credit hours taken at the University or transferred from a constituent institution of the University of North Carolina shall exclude hours earned through the College Board's Advanced Placement or CLEP examinations, through institutional advanced placement or course validation, through summer term or extension programs, or excess hours taken during 8 semesters for a four year or excess hours taken during 10 semesters for a five year program.

## AUDIT OF COURSES

Course auditing is available to any student upon payment of all applicable fees. Full-time students may audit courses without additional charges. Students auditing courses are not required to participate in class discussion, prepare assignments, or take examinations. COURSE AUDITING IS WITHOUT CREDIT.

## REGISTRATION FOR THESIS COURSES

Students who have completed all of their course work and have already registered for the total number of credit hours provided for the thesis in a previous semester are required to register for "thesis only" if they need to be at the University to complete their thesis or to engage in a research project.

Tuition charge for the 2002-2003 year for an in-state graduate student registered for thesis only is \$282.50. The charge for an out-of-state graduate student is \$1,418.25.

Students are not permitted to use the facilities of the University without being officially registered.

## RETURN OF TITLE IV FUNDS WITHDRAWAL FROM SCHOOL REFUND POLICY

Students who must leave the University prior to the end of the semester should follow the University guidelines for withdrawing from school. An Official Withdrawal Form must be obtained from the Counseling Center, completed, signed by the respective offices and submitted to the Registrar's Office before a student is considered officially withdrawn. Students who stop attending all of their classes but fail to complete the withdrawal process are considered as unofficially withdrawn. The U.S. Department of Education has established guidelines for institutions to follow for students who withdraw (officially or unofficially). The policy listed below applies to students who officially and unofficially withdraw from the University.

Federal student aid recipients who begin attending classes during a semester, who cease attending or performing academic activities prior to the end of the semester, and never complete an Official Withdrawal Form are considered by the federal government to have Unofficially Withdrawn. The University will consider the Unofficial Withdrawal date to be the midpoint of the semester (unless documentation exists of an earlier date of academic activity by the student).

When a federal financial aid recipient withdraws (officially or unofficially) after attending at least the first class day, the University will return, and the financial aid recipient will be required to repay a prorated portion of funds received based upon a federally required calculation (see Return of Title IV Funds section below). The Student Financial Aid Office is required to calculate the amount of federal Title IV financial aid students have earned and the amount that is unearned. The unearned portion of Title IV financial aid must be returned to the appropriate financial aid programs according to federal and institutional guidelines.

Students who withdraw on or before the 60% point of the semester will have a percentage of their financial aid calculated as earned and unearned on a pro-rata basis. If a student is enroll beyond the 60% of the semester, all financial aid is considered earned.

Example: You withdraw on the 25<sup>th</sup> day of the semester and there are 116 days in the semester, your earned and unearned financial aid would be calculated as follows:

Calendar days completed in the period of enrollment	25 days
Total calendar days in the period of enrollment	116 days
(excluding scheduled breaks of 5 days or more)	
	= 21.6%

If University records show a federal student aid recipient never attended a class and/or never performed an academically related activity for a semester or term, then the recipient never established eligibility for any aid funds that may have been disbursed for that semester. In addition, any student aid recipient who withdraws, drops all classes prior to the first day of class for a semester did not establish eligibility for any aid funds that may have been disbursed for that semester or term. In either case, the student aid recipient must repay the entire amount of aid disbursed for that semester or term.

If a student did not receive any federal student aid but did receive other types of aid funds, and subsequently officially withdraws, refunds or repayments will be based upon the University's refund policy.

Repayment of the Unearned Amount is calculated as follows:

School will return to the appropriate financial aid program(s) the lesser of:

- total amount of unearned aid or
- institutional charges (tuition, fees, room and board) multiplied by unearned percent

Student will return:

- remaining balance of unearned aid to the appropriate program(s) plus any amount the school returned that exceeds the amount of institutional charges that are credited back to the withdrawing student based upon the Institutional Refund Policy calculation.

The Unearned Amount of aid must be returned to the applicable Title IV aid programs in the following order:

Funds will be refunded, to the applicable programs, in the following order:

1. Unsubsidized Federal Direct Loan
2. Subsidized Federal Direct Loan
3. Federal Perkins Loan
4. Federal Direct PLUS Loan
5. Federal Pell Grant
6. Federal Supplemental Educational Opportunity Grant
7. Other Title IV Aid Programs

If the student is required to repay funds through the federal grant program, the student will be required to return no more than 50% of the federal grant amount that was originally received. If a balance is due the University, a bill will be sent to the student's permanent home address and will be due upon receipt.

With the exception of any amount owed to the school, students and/or parents who are required to return a portion of all of their loan proceeds, are allowed to repay the unearned amount according to the terms of the loan.

Students who are withdrawn from the University must complete and Exit Counseling. The Exit Counseling can be completed on-line at [www.ncat.edu](http://www.ncat.edu), click on financial aid, click on Direct Loan and click on Exit Counseling.

Note: The information contained in this section is subject to change, without notice, in order to comply with federal, state, or university requirements.

### **WITHDRAWAL FROM COURSES**

In order to receive financial credit for withdrawal from courses, a student must withdraw from course(s) within the official "add" period.

THE UNIVERSITY RESERVES THE RIGHT TO INCREASE OR DECREASE ALL FEES AND CHARGES, AS WELL AS ADD OR DELETE ITEMS OF EXPENSE WITHOUT ADVANCE NOTICE AS CIRCUMSTANCES IN THE JUDGMENT OF THE ADMINISTRATION MAY REQUIRE.



**SUMMER SCHOOL CHARGES PER CREDIT HOUR  
IN-STATE UNDERGRADUATE**

<b>No. of Credit Hrs.</b>	<b>Tuition</b>	<b>Other Required Fees</b>	<b>Total</b>
1	\$58.00	\$38.25	\$96.25
2	\$116.00	\$51.50	\$167.50
3	\$174.00	\$64.75	\$238.75
4	\$232.00	\$78.00	\$310.00
5	\$290.00	\$91.25	\$381.25
6	\$348.00	\$104.50	\$452.50
7	\$406.00	\$117.75	\$523.75
8	\$464.00	\$131.00	\$595.00
9	\$522.00	\$144.25	\$666.25
10	\$522.00	\$144.25	\$666.25
11	\$522.00	\$144.25	\$666.25
12 or more	\$522.00	\$144.25	\$666.25

**OUT-OF-STATE UNDERGRADUATE**

<b>No. of Credit Hrs.</b>	<b>Tuition</b>	<b>Other Required Fees</b>	<b>Total</b>
1	\$351.00	\$38.25	\$389.25
2	\$702.00	\$51.50	\$753.50
3	\$1,053.00	\$64.75	\$1,117.75
4	\$1,404.00	\$78.00	\$1,482.00
5	\$1,755.00	\$91.25	\$1,846.25
6	\$2,106.00	\$104.50	\$2,210.50
7	\$2,457.00	\$117.75	\$2,574.75
8	\$2,808.00	\$131.00	\$2,939.00
9	\$3,159.00	\$144.25	\$3,303.25
10	\$3,159.00	\$144.25	\$3,303.25
11	\$3,159.00	\$144.25	\$3,303.25
12 or more	\$3,159.00	\$144.25	\$3,303.25

**IN-STATE GRADUATE**

<b>No. of Credit Hrs.</b>	<b>Tuition</b>	<b>Other Required Fees</b>	<b>Total</b>
1	\$93.00	\$38.25	\$131.25
2	\$186.00	\$51.50	\$237.50
3	\$279.00	\$64.75	\$343.75
4	\$372.00	\$78.00	\$450.00
5	\$465.00	\$91.25	\$556.25
6	\$558.00	\$104.50	\$662.50
7	\$651.00	\$117.75	\$768.75
8	\$744.00	\$131.00	\$875.00
9	\$837.00	\$144.25	\$981.25
10	\$837.00	\$144.25	\$981.25
11	\$837.00	\$144.25	\$981.25
12 or more	\$837.00	\$144.25	\$981.25

**OUT-OF-STATE GRADUATE**

<b>No. of Credit Hrs.</b>	<b>Tuition</b>	<b>Other Required Fees</b>	<b>Total</b>
1	\$389.00	\$38.25	\$427.25
2	\$778.00	\$51.50	\$829.50
3	\$1,167.00	\$64.75	\$1,231.75
4	\$1,556.00	\$78.00	\$1,634.00
5	\$1,945.00	\$91.25	\$2,036.25
6	\$2,334.00	\$104.50	\$2,438.50
7	\$2,723.00	\$117.75	\$2,840.75
8	\$3,112.00	\$131.00	\$3,243.00
9	\$3,501.00	\$144.25	\$3,645.25
10	\$3,501.00	\$144.25	\$3,645.25
11	\$3,501.00	\$144.25	\$3,645.25
12 or more	\$3,501.00	\$144.25	\$3,645.25
Boarding and Lodging - (Double Occupancy)		\$635.00	

## DETAILS OF FEES, DEPOSITS AND CHARGES

	Per Semester	Per Year
<b>Required Fees – N.C. Student Tuition</b>		
Tuition	\$ 735.00	\$ 1,470.00
Other Required Fees	<u>580.00</u>	<u>1,160.00</u>
Total - N.C. Day Student	\$1,315.00	\$ 2,630.00
 <b>Boarding and Lodging</b>		
Board and Lodging	\$2,277.50	\$4,555.00
Reserve for Construction and/or Renovation of Dormitories	\$ 35.00	\$ 70.00
Mail Box Key (Refundable)	<u>10.00</u>	<u>10.00</u>
Total Boarding and Lodging	\$2,322.50	\$ 4,635.00
Total N.C. Boarding and Lodging Student	\$3,637.50	\$ 7,265.00
Out-of-State Student Tuition	\$5,195.50	\$10,391.00
Other Required Fees	\$ <u>580.00</u>	\$ <u>1,160.00</u>
Total Out-of-State Student	\$5,775.50	\$11,551.00
Boarding and Lodging	<u>\$2,322.50</u>	<u>\$ 4,635.00</u>
Total Out-of-State Boarding and Lodging	\$8,098.00	\$16,186.00

\*IN-STATE GRADUATE STUDENTS SHOULD ADD \$34.50 TO THE PER SEMESTER TOTALS AND \$69.00 TO THE PER YEAR TOTALS. OUT-OF-STATE GRADUATE STUDENTS SHOULD ADD \$117.50 TO THE PER SEMESTER TOTALS AND \$235.00 TO THE PER YEAR TOTALS.

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## STUDENT FINANCIAL AID

<http://www.ncat.edu/~finaid/>

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Through the Student Financial Aid Program, the University makes every effort to assure that no qualified student will be denied the opportunity to attend because of a lack of funds. Students who demonstrate financial need and have the potential for success in the University may obtain assistance to meet their expenses depending upon available funds. Financial aid is awarded without regard to a student's race, religion, color, national origin, gender, or disability. The University provides financial aid for students from four basic sources: grants, scholarships, loans, and employment.

The University student aid funds are administered in conjunction with a nationally established policy and philosophy of financial aid for education. The basis of this philosophy is the belief that parents are the primary and responsible resource for helping to meet educational costs, and student financial aid is available for filling the gap between the student's resources and expenses.

The amount of the contribution expected from parents is related to consideration of a family's net income, number of dependents, number in college and other financial information. The federal methodology is used to determine the student's and parents' expected family contribution (EFC). In order to be considered for federal, state and some institutional and private assistance, students must complete the Free Application for Federal Student Aid (FAFSA). Students are encouraged to apply online at [www.fafsa.ed.gov](http://www.fafsa.ed.gov).

The University utilizes the "packaging concept" of financial aid. Students who apply early with great need may expect assistance through a variety of sources, which may include loans, employment, scholarship and/or grants.

### **Typical Sources of Financial Aid**

Federal Pell Grant

Federal Supplemental Educational Opportunity Grant (SEOG)

Federal Work-Study Programs

State Tuition Grant (Need Based)

Federal Perkins Loan

Campus Base Grant

Federal Direct Student Loans

Federal Direct Parent Loans to Undergraduate Students (PLUS)

Detailed information pertaining to federal and state programs may be found on the web at [www.ncat.edu](http://www.ncat.edu).

The University offers several types of Departmental and Institutional Scholarships. The majority of these scholarships are administered within the academic and athletic departments. Students interested in these scholarships should contact the academic departments or coach.

A student seeking consideration for financial assistance must complete the following steps:

1. Submit the Free Application for Federal Student Aid to the Federal processor.
2. Submit copies of income information or other documents, if selected for verification or information is requested, to the Student Financial Aid Office.

A student who completes the Free Application for Federal Student Aid will be considered for all financial assistance at the University for which he/she is eligible provided funding is available. The priority deadline to have a completed application on file in the Student Finan-



cial Aid Office in order to receive consideration for assistance for any award year is March 15. Students must re-apply each year; financial aid is not an automatic process. A separate application must be completed for summer sessions.

*Entering Students.* A student entering the University as a freshman, transfer, graduate, or former student should apply for financial aid immediately after January 1 of any academic year. An award will not be made until a student is admitted to the University. Therefore, it is important that the admission procedure be completed as soon as possible. Any student who is admitted to the University as a “Special Student or Non-Degree Intent” student is not eligible to receive financial assistance unless he/she is working on completing Teacher Certification. The student must petition the Director of Admissions to have his/her status reviewed and changed, if applicable.

*Graduate Students.* A graduate student who applies for financial aid may be considered for loan assistance and campus employment. Information about graduate assistantships may be obtained from the Graduate School Office. To be considered for financial assistance, a graduate student must be admitted as a degree seeking student and maintain a 3.0 or better cumulative grade point average to remain eligible for loans and work study.

All applicants must re-apply for financial assistance each academic year and separately for summer sessions.

### **Information about Other Financial Aid Programs**

A student is encouraged to apply for sources external to the University. Any award from an external source must be reported to the Student Financial Aid Office to be included as a part of the student’s total aid. A student may be eligible for assistance from the following programs:

1. *North Carolina Student Incentive Grant (NCSIG) and the UNC Grant.* Grant funds are available to North Carolina residents who are full and part-time undergraduate students and who have demonstrated financial need. Students must be full-time for the NCSIG. College Foundation Inc administers these programs. Students are encouraged to complete the Free Application for Federal Student Aid by March 15.
2. *Vocational Rehabilitation.* Grants may be provided to needy students who are physically disabled. A North Carolina student should contact the Vocational Rehabilitation Office nearest the student’s home or the North Carolina Division of Vocational Rehabilitation Services in Raleigh, NC.
3. *North Carolina Prospective Teachers’ Scholarship-Loan.* Applications may be obtained beginning in mid-November for North Carolina students interested in obtaining funding for a career in teaching. Additional information may be obtained at <http://www.dpi.state.nc.us/scholarships>
4. *North Carolina Veterans’ Scholarship.* A full scholarship for four academic years at a state-supported institution may be awarded to children of deceased or disabled veterans or of veterans who were listed as POW/MIA. Interested students should contact the North Carolina Division of Veterans Affairs in Raleigh, NC.
5. *Rehabilitation Assistance for Visually Handicapped.* Grants may be provided to full-time North Carolina residents who are visually impaired. Students must attend a North Carolina post-secondary institution. The amount of assistance is based on need. Interested students should contact the Chief of Rehabilitation Services, Division of Services for the Blind in Raleigh, NC.

6. *Nurse Scholars Program (NSP)*. The Nurse Scholars Program is a competitive, merit-based scholarship/loan program available to students entering the nursing profession. Applications can be obtained from the Student Financial Aid Office, North Carolina Agricultural and Technical State University School of Nursing and the North Carolina State Education Assistance Authority.
7. *ROTC Scholarships*. AFROTC/AROTC scholarships for four (4), three-and-a-half (3 1/2), three (3), two-and-a-half (2 1/2), and two (2) years may be available, based on Air Force/Army Officer accession needs, to men and women in selected engineering fields, selected scientific fields, selected non-technical academic majors, Navigator/Missile Launch Officer (for last 3H, 3, 2 1/2, or 2 years of a Bachelors Degree), pre-health professions (only for last 2 or 3 years of a Bachelors Degree), pre-medicine (Physician/Osteopath only), and nursing (only for last 2 years of a Bachelors Degree in Nursing). Interested students should contact the ROTC Office on campus.
8. *The Quiester Craig Scholarship Fund*. An anonymous benefactor endowed this fund to provide academic scholarships for students majoring in Accounting. Named in honor of the School Dean, Dr. Quiester Craig, the recipients are determined by the Dean of the School of Business and Economics in consultation with the Chairman of the Accounting Department.
9. *Special Engineering Grants and Scholarships*. Students admitted as Engineering Majors are reviewed as part of the admissions process for eligibility for several scholarship programs. Criteria include a high school record of distinction. These programs are supported by the National Action Council for Minorities in Engineering, Inc. (NACME), R.J. Reynolds Company, and others. In addition, a variety of Corporations supports scholarship and Co-op programs, internships, and summer employment opportunities for engineering students who have attained outstanding scholastic records during their freshman or sophomore years and who have met other program-specific criteria.
10. *The North Carolina Teaching Fellows Scholarship Program*. Applicants are chosen on the basis of high school grades, class standing, SAT scores, writing samples, community service, extracurricular activities, and references from teachers and members of the community. Recipients must be accepted for admission to the University. Applicants are screened by two committees, one from the applicant's local school district and the other from the educational region in which the applicant lives. Candidates recommended by the selection committees are interviewed by the Regional Screening Committees. Recipients of Teaching Fellows Awards are named in April of each year. Financial need is not a selection criterion. The maximum award is \$6,500 per year and is renewable for a total of four years of college. Applications are available from the North Carolina Teaching Fellows Program and high school counselors' offices. Additional information may be obtained at <http://www.teachingfellows.org/>.
11. *Ronald McNair Scholarships*. Ronald McNair Scholarships are offered to economically or financially disadvantaged students entering the fields of physics or engineering. High school students are invited to apply for these scholarships as incoming freshmen. Interested students should contact the Department of Physics or Engineering at North Carolina Agriculture and Technical State University.

Minimum requirements for recipients are:

- A. A minimum load of 12 credits per semester.
- B. A minimum gpa of 2.5.

C. Two letters of recommendation from North Carolina Agricultural and Technical State University faculty.

The selection of scholars will be handled by the college of arts and Sciences for physics scholarships and by the College of Engineering for engineering scholarships.

12. *North Carolina Student Loan Program for Health, Science, and Mathematics.* Legal residents of north carolina accepted as full-time students in accredited baccalaureate or master's programs leading to a degree are eligible for this program. Studies must be in health (allied health, health sciences, clinical psychology, medical social work), mathematics (general, pure and applied mathematics, statistics, actuarial science), and science (agricultural sciences, renewable natural resources, computer and information sciences, engineering and engineering related technologies, life sciences, physical sciences, food sciences and human nutrition, dietetics/ human nutritional services). Recipients are selected according to interest, academic capabilities, motivation and financial need. Maximum loans range from \$2,500 to \$6,000 a year depending on the degree level. Loans are renewable annually on satisfactory academic progress. Students should request information and applications between december 1 and april 1 from the north carolina student loan program for health, science, and mathematics in raleigh, nc.
13. *Sigmund Sternberger Scholarships.* Sigmund Sternberger scholarships are available to assist guilford county students in attending the university. These awards are made to students who have the character, integrity, ability and desire to make a contribution to the community, but who are prevented from developing their full potential because, due to no fault of their own, they lack economic resources with which to develop their skills.
14. *The C.M. And M.D. Suther Scholarship Program.* This award is available to a full-time north carolina resident undergraduate who has a financial need. The student must be enrolled. The scholarship can be made either to a freshman who graduated in the top 25% of his/her high school graduating class or to an upper-class student with an academic average of at least a 3.0. Only one award is made each year and is nonrenewable. The Director of Student Financial Aid chooses the recipient.
15. *Dr. A. P. and Frances Dickson Scholarships.* The A. P. Dickson scholarship is awarded annually to a full-time undergraduate student who currently resides in hoke county, north carolina. The Sirector of Student Financial Aid on the basis of academic standing and financial need chooses recipients. Awards are nonrenewable and vary in amount according to income available from the trust.
16. *James Lee Love Scholarship.* A Love Scholarship is awarded annually to a full-time North Carolina resident undergraduate student. The recipient is selected by the Director of Student Financial Aid on the basis of academic standing and financial need. Awards are nonrenewable and vary in amount according to income available from the trust.
17. *North Carolina Agricultural and Technical State National Alumni Scholarship.* The North Carolina Agricultural and Technical State University National Alumni Scholarship is a four-year scholarship for ten entering freshmen. Applicants are selected based upon nominations from the local alumni chapters. The alumni chapters distribute the applications and other criteria to the area high schools. To be considered for the scholarship, the applicant must have a 3.0 cumulative grade point average and a minimum SAT score of 1,000. The filing deadline for the scholarship application is December 1. In-state students who are selected will receive a maximum amount to cover the cost of tuition, fees, room and board. Out of state students who are selected will receive a maximum up to the



cost of tuition, fees, room and board. The recipient must maintain at least a 3.0 cumulative grade point average each semester for continued eligibility. Interested students should contact the Office of Alumni Affairs or one of the North Carolina local A&T State University Alumni Chapters.

18. *Chancellor's Incentive Scholarship*. The Chancellor's Incentive Scholarship is intended to give needed aid to well-prepared students who want to attend North Carolina Agricultural and Technical State University. The Chancellor's Incentive Scholarship will be used after all other need-based aid for which the student is also eligible has been included in the student's financial aid package. The total scholarship award under the program shall carry a maximum value not to exceed \$3,000.

1. Entering freshmen must:

- A. Be a graduate of a high school in North Carolina (students from all counties are eligible for this scholarship program);
- B. Rank in the top half of their class upon high school graduation, and meet all other university admissions requirements;
- C. Apply for need-based student financial aid; the total scholarship award under the program shall carry a maximum value equal to the cost of tuition, fees, room, board and books; incentive scholarship funds will be used after all other need-based funds for which the student is also eligible have been included in the student's financial aid package;
- D. Must carry and complete at least 15 semester hours each semester; and
- E. Earn a grade point average (gpa) in course-work taken at the university according to the following schedule:
  - Earn a 2.6 or higher cumulative gpa by the end of the freshman year;
  - Earn a 2.8 or higher cumulative gpa by the end of the sophomore year;
  - Earn a 3.0 or higher cumulative gpa by the end of the junior year;
  - Earn a 3.0 or higher cumulative gpa by the end of the senior year.

A student who enters the program from a certificate program from the community college must reflect in personal and scholastic behavior high moral and ethical standards and meet the criteria stated above.

2. To be eligible for a Chancellor's Incentive Scholarship, a transfer student must meet the following requirements:
- A. Be a resident of North Carolina and possess the Associate of Arts (AA), the Associate of Science (AS), the Associate of Fine Arts (AFA), or a certificate or degree in a program that articulates directly with an academic degree program offered by Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, Pembroke State University, Winston-Salem State University, or from a North Carolina Community College and meet all University admission requirements; must have an articulation agreement.
  - B. Have a cumulative GPA of at least 2.50 if the student enters with an associate degree, or a 2.00 if the student enters after completion of a certificate program;
  - C. Meet all other criteria stated above for a freshman.



19. *Nurse Education Loan Program (NESLP)*. The Nurse Education Loan Program is a scholarship loan based on the student's financial need and the cost of attendance at the University. Awards are made on the basis of financial need and the promise to serve as a full-time nurse in North Carolina after completing the nurse education program. NESLP awards are available subject to continued legislative appropriation and allocation of funds. Applications can be obtained from the Student Financial Aid Office or North Carolina Agricultural and Technical State University School of Nursing.

### **SATISFACTORY ACADEMIC PROGRESS**

The Higher Education Act requires that in order to receive any Title IV Aid (Federal Pell Grant, Federal Supplemental Educational Opportunity Grant (SEOG), Federal Work-Study (FWS), Federal Perkins Loan, Federal Direct Loan, Federal Direct Parent Loan for Undergraduate Students (PLUS) and State Assistance, a student must maintain satisfactory academic progress towards a degree. The satisfactory academic progress applies to all terms whether or not financial aid was received.

#### **Undergraduate Eligibility\***

To be considered maintaining **satisfactory academic progress**, an undergraduate student must meet the following minimum requirements:

<b>No. of Semesters</b>	<b>Cumulative Grade Point Average</b>	<b>Minimum No. of Credit Hours Earned</b>
1	1.40	12
2	1.50	24
3	1.60	36
4	1.80	48
5	1.90	60
6	2.00	72
7	2.00	84
8	2.00	96
9	2.00	108
10	2.00	124

**\*This standard is consistent with the University's academic standards required for graduation.**

Satisfactory progress will be evaluated for all students (full or part-time) at the end of each academic year (end of spring semester). Students who enroll at the mid-point (January) of an academic year or attend one semester only will be evaluated at the end of the semester. Thereafter, these students will be evaluated at the end of the academic year. Students receiving the North Carolina Incentive Grant will be evaluated at the end of the academic year.

Suspension for the Spring semester will be based on the list developed by the Registrar's Office.

Failure to earn the required grade point average and cumulative hours will place the student on financial aid suspension. Students who are suspended from financial aid must remove their academic deficiencies or have an appeal granted before reinstatement of aid. All

students are encouraged to attend summer school to remove their deficiencies or make additional progress toward earning the degree. A student who does not enroll for a semester and re-enrolls will be evaluated at the time of re-admission.

Students who enroll for one semester must earn the required grade point average and cumulative hours for one semester of attendance. Any student who attends for one semester and fails to meet the semester requirement may be placed on probation and encouraged to attend summer school to get back on track.

Students who are placed on probation for a semester will have an action plan developed. Any student who fails to meet the requirement of the action plan will be suspended the following semester.

At the completion of summer school, students must request a review of their academic standing. This is not an automatic process. If the deficiencies are removed after summer school attendance, the student will be reviewed again at the end of the spring semester.

**A part-time undergraduate student is enrolled for less than twelve (12) semester hours. A part-time graduate student is enrolled for less than nine (9) semester hours.** Part-time students must meet the same grade point average requirement for eligibility as full-time students and must earn 80% of the total credits for which they enroll. Students who attend with mix enrollment (e.g. full-time-first -semester and part-time-second semester) must earn 80% of the hours attempted.

Failure to meet the minimum standards outlined will result in immediate financial aid suspension.

A student who has not received financial assistance in previous award years and subsequently applies for financial aid will be evaluated based on the policy listed above.

The Student Financial Aid Office allows full-time undergraduate students 11 semesters; not including summer school; for completion of a 124 semester hours degree which enables students to take up to 186 hours. Less than full-time students will be extended additional semesters on a pro-rata basis not to exceed the equivalent of 11 semesters of full-time enrollment. Once a student has completed the 11 semesters of enrollment, the student is no longer eligible for financial aid regardless of whether aid was received. University guidelines require a student to carry 12 quality credit hours per semester to be considered full-time; therefore, satisfactory academic progress is based on the assumption that a full-time student must accumulate the minimum of 24 quality hours per academic year or 80 percent of 30 semester hours per year. Determination of academic load is made at the end of the add/drop period each semester. Withdrawing from class(s) after the add/drop period may affect the student's ability to earn the required hours.

***All attempted hours are counted in determining the 186 hours limit, including transfer hours, whether or not financial aid was received or the course work was successfully completed.*** A student will be considered to have reached the maximum number of hours (186) to include the current and expected semester of attendance. If a student after the semester in which the 186 attempted hours is reached or exceeded.

***Transfer students*** will be evaluated based on the above policy. Transfer credits include hours earned at institutions other than North Carolina Agricultural and Technical State University and will be used to determine the student's classification and required grade point average. Transfer hours will be included in "total hours attempted" in determining the 186 hours requirement and to determine the cumulative grade point average required. Transfer students are required to earn the required number of hours depending upon enrollment status

(full or part-time). To determine the number of semesters in attendance, accepted transfer hours are divided by 12 and will be added to full-time semesters at North Carolina A&T State University. If the remainder is 1-5 hours, it is not counted; if the remainder is 6-11 hours, it is counted as 1/2 of a semester.

**Second Degree Students** who have already earned a bachelor's degree and are pursuing another undergraduate degree must present a letter from the Academic Advisor, Dean or Department Chair indicating that the student is working on a second degree. The letter must include the student's name, social security number, the total number of hours to complete the second degree, the total number of hours used from the first degree, the list of courses required and the anticipated date of completion for the second degree. Second-degree students cannot exceed the aggregate loan limit for an undergraduate student. Second-degree students must maintain a 2.0 annually and pass the required number of hours as all other students.

**Teacher Certification Students** must maintain a 2.0 annually and pass the required number of hours as all other students.

**Dual Degree/Double Major Students** must maintain progress as stated above. These students must pass the required number of hours and maintain the required grade point average as all other students.

**Withdrawal (W grade)**, which is recorded on the student's transcript, will be included as credits attempted and will have an adverse effect on the student's ability to maintain satisfactory academic progress. Students who officially withdraw from the University must make up the deficit hours and are encouraged to attend summer school to remove the deficient hours.

The successful completion of a course is defined as receiving one of the following grades: A, B, C or D. Courses with grades of F, I and W will not qualify in meeting the minimum standard.

An **Incomplete (I) grade** indicates that a student has not finished all course-work required for a grade and is included in the cumulative credits attempted. An incomplete will not count as hours passed until a final grade is posted in the Registrar's Office.

**Repeated courses** – A student who has received a failing grade in a required course at this University must repeat and pass the course unless otherwise indicated by the Registrar or Dean. No single course may be repeated more than (2) two times.

**Change of Major** – A student may change from one degree to another during attendance at the University. Students who change from one major to another are still expected to maintain satisfactory academic progress and complete the course work within the time frame or hours limitation stated unless an appeal is approved.

**Audited courses** do no count as either attempted or earned hours.

**Hours Enrolled** – The number of credit hours in which the student is enrolled on the day following the published last day to add/drop a class will be used as official enrollment for financial assistance purposes; full-time status is 12 or more hours. If a student withdraws from classes after the date cited above and reduces his/her enrollment below the awarded status, (the number of hours recorded as of the add/drop date) the student will not meet the minimum number of hours to be earned in one academic year.

**NOTE:** Hours earned by Advanced Placement, International Baccalaureate or College Level Examination Program (CLEP) is considered towards meeting the semester hours requirement only for a student's first academic year.



**Re-admitted students** will be reviewed on their previous academic records in order to determine eligibility for assistance, whether or not financial aid was received.

**Suspended students** who are allowed to return to the University must attend and pay for the semester of re-admission unless an appeal is approved. Denial of financial aid does not prevent students from attending the University, if they are otherwise eligible to continue their enrollment. Students who enroll at the University, without benefit of financial aid, may request a review of their academic records after any term in which they are enrolled to determine whether satisfactory academic progress has been met. If the standards are met, eligibility is regained for subsequent terms of enrollment in the academic year.

It is the student's responsibility to be aware of his or her academic standing each semester. Although the Student Financial Aid Office will make every effort to promptly notify students of the cancellation of their awards, students are responsible for obtaining their grades and determining if they meet the criteria for continuation of their awards.

**PROBATION** – A first year student will be placed on probation if they are no more than 6 hours deficient and the grade point average is no less than a 1.00.

### **RE-ESTABLISHING SATISFACTORY ACADEMIC PROGRESS**

Any student whose financial aid has been terminated may reestablish satisfactory progress by any of the following methods:

- taking courses during the summer session(s)
- repeating failed courses
- removing incomplete grades

Cumulative grade point average can only be increased by attendance at North Carolina Agricultural and Technical State University. Deficient hours may be made up by successfully completing course work at NC A&T State University or at another institution. Before enrolling at another institution, the student must secure the proper approval(s).

#### **Summer School**

Satisfactory Academic Progress for Summer School will be based on the student's current eligibility status. Students who are suspended from financial aid are encouraged to attend summer school to remove their academic deficiencies. Financial aid for summer school is not available to students not maintaining satisfactory academic progress. Students attending summer school to remove deficiencies must contact the Student Financial Aid Office for evaluation of their progress after summer school grades are posted. Evaluation is not an automatic process; however, removal of deficiencies automatically makes the student eligible for financial aid.

A student who is not suspended prior to a summer session will not be suspended because of performance in that summer session. Students will not be suspended at the end of a summer session. All students will be given the opportunity to attend summer school to improve their gpa. Summer session enrollment at North Carolina Agricultural and Technical State University will not be counted as a semester despite the number of hours enrolled.

### **APPEAL PROCESS**

*Students denied federal and/or state financial aid for failure to meet the satisfactory academic progress standards are advised in writing of their right to appeal the decision. A letter is mailed to the student's permanent home address on file in the Registrar's Office. A*



*student may request reinstatement of his or her financial aid based on extenuating circumstances by writing a letter of appeal to the Director of Student Financial Aid.* Approval of an appeal for satisfactory academic progress will be considered if the student has suffered undue hardship, such as death of an immediate family member, injury or illness of the student, change of major, or other special circumstances that may have prevented the student from performing his/her academic best. Students should submit documentation to support the request for a waiver.

All appeals should be addressed to the Director of Student Financial Aid and on file in the Student Financial Aid Office no later than the deadline date established. All appeals will be reviewed on a case-by-case basis.

**If an appeal is approved, the student must:**

Sign a Satisfactory Academic Progress Action Plan with the Student Financial Aid Office, which indicates the stipulation of the appeal. The student should schedule an appointment with their Academic Advisors or Academic Deans to develop an academic plan of action.

Students will be notified, in writing, of the Financial Aid Administrator or Student Financial Aid Committee's decision within three weeks of the request. Normally, only one appeal is granted to a student; however, in extreme cases, a second appeal may be granted. Two appeals will be the maximum granted.

Students who disagree with the Financial Aid Administrator's decision may request an appeal before the Student Financial Aid Committee.

**Unsatisfactory Progress Notification**

Students who do not meet the requirements of the satisfactory academic progress policy will be notified by mail of their suspension from financial aid at the end of the academic year. The letter will be mailed to the student's permanent home address.

Students who are granted an appeal and do not meet the requirement(s) will be notified at the end of the semester in which the appeal was approved and eligibility was not met.

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## ADMISSIONS

<http://www.ncat.edu/admissions.html>

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### POLICY

North Carolina Agricultural and Technical State University is an equal opportunity institution committed to the equality of educational opportunity and does not discriminate against applicants based on race, color, national origin, religion, gender, age or disability. Unless otherwise specified, admission to all undergraduate curricula is under the jurisdiction of the Director of Admissions.

### PROCEDURES

#### Submission of Application

Inquiries and applications for admissions should be made to the Office of Admissions, B.C. Webb Hall, North Carolina Agricultural and Technical State University, Greensboro, North Carolina 27411. A non-refundable fee of \$35.00 is required with each application. The University does not accept fee waivers.

#### Application Deadline

The recommended deadlines for submitting the application for admission is June 1 for the fall semester and December 1 for the spring semester. Applications received after these dates will be honored on a day-to-day basis as long as classroom space is available. Applications for early decision must be received by November 1 prior to the fall semester of the intended enrollment. In all cases, early application is encouraged because class space and housing facilities dictate, to some extent, the number of new students that can be admitted for each semester.

International students on non-immigrant visas are required to submit the application by May 1 for the fall semester and November 1 for the spring semester.

#### Supporting Documentation

1. To be considered official, all transcripts from high school and/or college must be sent directly to the Office of Admissions from the sending institutions.
2. SAT or ACT scores, when applicable, should be official and reports sent directly from the testing agency. The University's CEEB code for the SAT report is 5003; the code for the ACT report is 3060. Official scores listed on high school transcripts and student received reports may be utilized for admission consideration.
3. The submission of a final or complete transcript from the last school attended is the responsibility of the student. Thus, the University reserves the right to withdraw any offer of admission if the applicant fails to satisfy all requirements prior to the beginning of the first semester of enrollment. Students who have not fulfilled minimum admission requirements will be withdrawn from the University.

#### Notice of Admission and Confirmation

The University practices "rolling admission"; therefore, decisions are made as soon as a file is complete. Early decision notices are mailed between December 1 and December 15. Candidates who are offered admission must notify the University by January 15 of their intent to enroll. Students approved for admission are forwarded a "Certificate of Admission." The candidate reply date of May 1 for freshman students for each fall term is honored by the University. Transfer students should confirm their acceptance within two weeks of the receipt

of the admission letter. Failure to comply may adversely affect the candidate's reserved space. Persons who are not approved for admission will also be notified in writing on a timely basis.

Prior to registration for each semester, the final official high school transcript showing the date of graduation must have been received for all new freshmen, and the final official college transcript must have been received for all transfer students. In addition, the Medical Health Form must be completed by the student's physician and returned, along with a copy of his or her Immunization Record, to the Director of Health Services. North Carolina law requires the University to suspend students who have not satisfied immunization requirements within 30 days from the beginning of classes for that semester. An immunization record copy from your high school is acceptable.

## **ADMISSIONS CRITERIA**

### **Freshman Applicant**

An applicant for admission is considered individually in accordance with the following criteria:

1. Evidence of academic achievement and promise with considerable facility in the use of the English language and with an understanding of the fundamental mathematical processes;
2. Complete record from an accredited secondary or preparatory school with graduation based on no fewer than 16 units; (See subject matter requirements in next section.)
3. Satisfactory scores on the Scholastic Assessment Test or the American College Test; (Students may be exempt from these tests if the high school graduation date is five (5) or more years at the point of matriculation to the University.)
4. Satisfactory class rank or grade point average.

These criteria, and those which follow, are applied flexibly to assure that people with unusual qualifications are not rejected in the admissions process. However, admission to the University is selective for out-of-state students. The University of North Carolina System has mandated that no more than 18 percent of the freshman class can be from out-of-state. Therefore, academic achievement and SAT/ACT scores must be competitive.

### **Minimum Undergraduate Course Requirements**

For admission to all undergraduate programs, the applicant must present the following Minimum Course Requirements:

English: four course units emphasizing grammar, composition and literature  
Foreign Language: two course units of the same foreign language

Mathematics: three course units including Algebra I, Algebra II, and Geometry, or a higher level mathematics course for which Algebra II is a prerequisite

Science: three course units including at least one unit in a life or biological science, at least one unit in a physical science, and at least one laboratory course

Social Science: two course units including one unit in U. S. history

In addition to the above listed criteria, the minimum standards governing admission to the School of Nursing are as follows:

- 1) a combined Scholastic Assessment Test score of 800 or higher, or
- 2) a cumulative grade point average of "B" or better.

The University of North Carolina System and North Carolina Agricultural and Technical State University may waive some of the minimum high school course unit requirements under the following categories:

1. Applicants who are at least twenty-four (24) years of age prior to the first day of classes for the semester which the applicant is applying;
2. Transfer applicants who (a) have the associate of arts, the associate of science, the associate of fine arts, the baccalaureate or any higher level degree, or (b) are pursuing a degree under an approved articulation agreement, or (c) have completed six semester hours of degree creditable work in each of the following areas: English, Mathematics, the Natural Sciences, the Social and Behavioral Sciences, and Foreign Language.

For specific requirements, students should refer to the respective schools/college section and to departmental listings in this bulletin. However, the University reserves the right to change admission standards for schools/colleges prior to the semester the student plans to enroll.

### **Transfer Students**

The University accepts qualified students from other accredited colleges. Applications for admission may be considered if the transfer student:

- 1) is not presently on social or academic probation at the last or current school of attendance;
- 2) has a cumulative grade point average of at least a 2.0 at the institution from which transferring and is eligible to return to that institution; and
- 3) has not been suspended or dropped from another institution.

Transfer students who have attended another accredited college but have earned less than thirty (30) semester hours of specific acceptable credit must meet all freshman requirements. Transferable coursework must include six (6) semester hours in each of the following areas — English, history, mathematics, science, and foreign language — in order to be exempt from any high school requirements. Transfer for programs in the School of Engineering requires a 2.5 GPA if transferring from a four year institution with an accredited engineering program or 3.0 GPA if transferring from other types of institutions. Applications from transfer students cannot be considered until all credentials are received from the high school and all other institutions previously attended. In addition, there must be a statement of good standing and honorable dismissal from these institutions. Previous college records must show a cumulative grade point average of 2.0 or above. No course is accepted in transfer in which a grade below “C” was earned.

Transfer applicants may be exempt from sending high school transcripts and/or standardized test scores if they fall under the following categories:

1. Applicants who were awarded the high school diploma prior to 1988 and/or are at least twenty-four years (24) years old prior to the beginning of classes and have completed thirty (30) semester hours of degree creditable work;
2. Applicants who have the associate of arts, the associate of science, or the associate of fine arts, the baccalaureate or any higher level degree;
3. Applicants who have completed a degree under an articulation agreement; or
4. Applicants who have completed six (6) semester hours of degree creditable work in each of the following areas: English, Foreign Language, Mathematics, the Natural Sciences, and the Social and Behavioral Sciences.



Accepted courses are recorded to the student's credit, but grade points are not calculated on the transferred courses. The University does not accept transfer credit from challenge examinations or for course work where grades of P/F have been given. The maximum number of transferable credits is 80 semester hours from a four (4) year college and 64 semester hours from a two (2) year college.

Transfer applicants who are not covered by the above-stated policy should refer to the next section on special students. However, the University reserves the right to change admission standards prior to the semester the student plans to enroll.

### **Special Students**

Special students are those who are not candidates for degree at the present time. This category includes (1) visiting students and (2) persons who have not enrolled for one academic year and are ineligible for admission as a transfer student. The University welcomes into this admission status enrollment of persons who are pursuing degrees elsewhere, who possess a baccalaureate degree, or who desire to earn prerequisites for graduate work. Such students may register upon the presentation of a signed statement from the appropriate official of his/her institution, or certifying agency, specifically listing and approving the courses to be taken. Such enrollment does not constitute regular admission to the University. To apply for this category of admission, the applicant must submit the application form for admissions with fee and provide supporting documentation as appropriate. Transcripts from all colleges and universities attended are required if the applicant plans to enter degree-seeking status at a later date. Visiting students must submit a transient course study form from the home institution that has been approved by the department chairperson, school or college dean and the University registrar. All others must provide evidence of readiness to pursue the courses desired and a statement of objective and purpose related to the request for special student admission. Such persons may register for no more than 12 semester hours per academic term and may remain in this category until they have attempted a total of 24 semester hours.

After completing one semester of full-time study or its equivalent, the unclassified student may petition the Office of Admissions to be admitted to the University as a regular degree seeking candidate on the basis of his/her academic accomplishments. All communications must be written and sent to the committee in care of the Director of Admissions.

### **International Students**

North Carolina Agricultural and Technical State University welcomes and accepts applications from qualified students who are not United States citizens. Such students must meet each of the following criteria:

- 1) Satisfy all requirements governing admissions for the School to which the application is made.
- 2) Show proficiency in written and oral English usage. If English is not the first language of communication, the Test of English as a Foreign Language (TOEFL) is required and a satisfactory level of English proficiency on both the total and part scores are required. A minimum score of 550 (paper based) or 213 (computer based) is required. An applicant may submit SAT/ACT scores in place of TOEFL scores.
- 3) Can conform to all contract regulations of the United States Immigration and Naturalization Service and be eligible for F-1 Student status as a freshman or transfer student from another school.

The I-20 Certificate of Eligibility will be prepared for all new international students who are admitted to the University and who have official documentation on file attesting to their ability to meet their school fees. The University has no financial aid for international students and permission to work is not usually granted by the Immigration and Naturalization Service.

## **OTHER POLICIES AND PROCEDURES**

### **Filing of Credentials**

Applicants should take the proper steps to see that their credentials are sent to the Director of Admissions as early as possible, preferably not less than thirty (30) days before the beginning of the semester in which they plan to enroll.

### **Interviews and Campus Visits**

Interviews are not required for admission; however, persons with unusual circumstances are welcome to schedule appointments to discuss these matters with an Admissions Counselor or the Director of Admissions. Campus visits are encouraged and campus tours are routinely given. Reservations for the tour are highly recommended.

### **Orientation, Registration and the Opening of the Semester**

All newly admitted students are expected to attend Orientation, and freshman students living on campus must arrive the day preceding the freshman Orientation program (see University Calendar). Orientation for transfer and special students is scheduled for the day preceding registration. Placement testing in Mathematics and English is required for all freshmen. These tests are designed as aids for academic advising and scheduling. Students who fail to show proficiency in these academic areas will be assigned remedial course work. Transfer students for programs in Engineering, Mathematics, Computer Science, Animal and Plant Science, Chemistry, Physics, Biology, and Electronics Technology are required to take a special mathematics test.

### **Permission to Take Courses Elsewhere**

North Carolina Agricultural and Technical State University degree-seeking students who desire to take courses elsewhere are required to obtain approval from their school/college dean before registering at another institution. Course descriptions are needed in order for accurate evaluations to be done. Only the credit hours will transfer to A&T and a minimum grade of "C" is required for a course to transfer. The University does not accept credit from proficiency examinations or grades of P/F. Transient Study Forms and Guidelines for off-campus study are available in the Office of Admissions.

### **Regulations for Veterans and Children of Deceased and Disabled Veterans**

Veterans and children of deceased and disabled veterans must meet regular admission requirements. Preliminary application for any educational benefits due them should be made to the nearest regional office of the Veterans Administration well in advance of the desired admission date in order that the necessary information and documents may be obtained. Veterans who have a minimum of one year of active service may receive credit for Health Education, Physical Education, and military science electives. A copy of the DD-214 must be submitted to the Office of Admissions.

## **Graduate Applicants**

Graduate school admission is under the supervision of the Dean of the Graduate School, North Carolina Agricultural and Technical State University, Greensboro, North Carolina 27411. For information concerning admission, please write the Dean of the Graduate School, North Carolina Agricultural and Technical State University, Greensboro, NC 27411.

## **Continuing Education Applicants**

Summer session, the evening and weekend college and continuing education, off-campus and non-credit courses, are under the supervision of the Assistant Vice Chancellor for Academic Affairs. Information concerning admission and/or enrollment should be directed to that office. The address is:

Office of Continuing Education and  
Summer Sessions  
1020 E. Wendover Avenue  
North Carolina Agricultural and Technical State University  
Greensboro, NC 27411

Generally, admission requirements for continuing education classes are the same as those for comparable work in regular classes on campus. However, persons may enroll without being officially admitted for non-credit courses and programs not applicable to a University degree. A continuing education applicant is usually one of mature years, with special training along particular lines or of long experience in special fields of knowledge. Thus, such a person can be either a degree or unclassified applicant. Continuing education enrollees who have taken compatible courses for credit may later choose to change their status to degree seeking. At the time of application for admission to degree status, the continuing education applicant is required to satisfy the standard admission policies.

## **RESIDENCE STATUS FOR TUITION PURPOSES**

The basis for determining the appropriate tuition charge rests upon whether a student is a resident or a nonresident. Each student must make a statement as to the length of his or her residence in North Carolina with assessment by the institution of that statement to be conditioned by the following:

*Residence.* To qualify as a resident for tuition purposes, a person must become a legal resident and remain a legal resident for at least twelve months immediately prior to classification. Thus, there is a distinction between legal residence and residence for tuition purposes. Furthermore, twelve months' legal residence means more than simple abode in North Carolina. In particular, it means maintaining a domicile (permanent home of indefinite duration) as opposed to "maintaining a mere temporary residence or abode incident to enrollment in an institution of higher education." The burden of establishing facts which justify classification of a student as a resident entitled to in-state tuition rates is on the applicant for such classification, who must show his or her entitlement by the preponderance (the greater part) of the residuary information.

*Initiative.* Being classified a resident for tuition purposes is contingent on the student's seeking such status and providing all information that the institution may require in making the determination.

*Parents' Domicile.* If an individual, irrespective of age, has living parent(s) or court-appointed guardian of the person, the domicile of such parent(s) or guardian is, prima facie, the domicile of the individual; but this prima facie evidence of the individual's domicile may or



may not be sustained by other information. Further, nondomiciliary status of parents is not deemed prima facie evidence of the applicant child's status if the applicant has lived (though not necessarily legally resided) in North Carolina for the five years preceding enrollment or reregistration.

*Effect of marriage.* Marriage alone does not prevent a person from becoming or continuing to be a resident for tuition purposes, nor does marriage in any circumstance insure that a person will become or continue to be a resident for tuition purposes. Marriage and the legal residence of one's spouse are, however, relevant information in determining residency intent. Furthermore, if both a husband and his wife are legal residents of North Carolina and if one of them has been a legal resident longer than the other, then the longer duration may be claimed by either spouse in meeting the twelve-month requirement for in-state tuition status.

*Military Personnel.* A North Carolinian who serves outside the State in the armed forces does not lose North Carolina domicile simply by reason of such service. And students from the military may prove retention or establishment of residence by reference, as in other cases, to residency acts accompanied by residency intent.

In addition, a separate North Carolina statute affords tuition rate benefits to certain military personnel and their dependents even though not qualifying for the in-state tuition rate by reason of twelve months' legal residence in North Carolina. Members of the armed services, while stationed in and concurrently living in North Carolina, may be charged a tuition rate lower than the out-of-state tuition rate to the extent that the total of entitlements for applicable tuition costs available from the federal government, plus certain amounts based under a statutory formula upon the in-state tuition rate, is a sum less than the out-of-state tuition rate for the pertinent enrollment. A dependent relative of a service member stationed in North Carolina is eligible to be charged the in-state tuition rate while the dependent relative is living in North Carolina with the service member and if the dependent relative has met any requirement of the Selective Service System applicable to the dependent relative. These tuition benefits may be enjoyed only if the applicable requirements for admission have been met; these benefits alone do not provide the basis for receiving those derivative benefits under the provisions of the residence classification statute reviewed elsewhere in this summary.

*Grace Period.* If a person (1) has been a bona fide legal resident, (2) has consequently been classified a resident for tuition purposes, and (3) has subsequently lost North Carolina legal residence while enrolled at a public institution of higher education, that person may continue to enjoy the in-state tuition rate for a grace period of twelve months measured from the date on which North Carolina legal residence was lost. If the twelve months end during an academic term for which the person is enrolled at a State institution of higher education, the grace period extends, in addition, to the end of that term. The fact of marriage to one who continues domiciled outside North Carolina does not by itself cause loss of legal residence marking the beginning of the grace period.

*Minors.* Minors (persons under 18 years of age) usually have the domicile of their parents, but certain special cases are recognized by the residence classification statute in determining residence for tuition purposes.

- (a) If a minor's parents live apart, the minor's domicile is deemed to be North Carolina for the time period(s) that either parent, as a North Carolina legal resident, may claim and does claim the minor as a tax dependent, even if other law or judicial act assigns the minor's domicile outside North Carolina. A minor thus deemed to be a legal



resident will not, upon achieving majority before enrolling at an institution of higher education, lose North Carolina legal residence if that person (1) upon becoming an adult “acts, to the extent that the person’s degree of actual emancipation permits, in a manner consistent with bona fide legal residence in North Carolina” and (2) “begins enrollment at an institution of higher education not later than the Fall academic term following completion of education prerequisite to admission at such institution.”

- (b) If a minor has lived for five or more consecutive years with relatives (other than parents) who are domiciled in North Carolina and if the relatives have functioned during this time as if they were personal guardians, the minor will be deemed a resident for tuition purposes for an enrolled term commencing immediately after at least five years in which these circumstances have existed. If under this consideration a minor is deemed to be a resident for tuition purposes immediately prior to his or her eighteenth birthday, that person on achieving majority will be deemed a legal resident of North Carolina of at least twelve months’ duration. This provision acts to confer in-state tuition status even in the face of other provisions of law to the contrary; however, a person deemed a resident of twelve months duration pursuant to this provision continues to be a legal resident of the State only so long as he or she does not abandon North Carolina domicile.

*Lost but Regained Domicile.* If a student ceases enrollment at or graduates from an institution of higher education while classified a resident for tuition purposes, and then both abandons and reacquires North Carolina domicile within a 12-month period, that person, if he or she continues to maintain the reacquired domicile into re-enrollment at an institution of higher education, may re-enroll at the in-state tuition rate without having to meet the usual twelve-month durational requirement. However, any one person may receive the benefit of the provision only once.

*Change of Status.* A student admitted to initial enrollment in an institution (or permitted to re-enroll following an absence from the institutional program which involved a formal withdrawal from enrollment) must be classified by the admitting institution either as a resident or as a nonresident for tuition purposes prior to actual enrollment. A residence status classification once assigned (and finalized pursuant to any appeal properly taken) may be changed thereafter (with corresponding change in billing rates) only at intervals corresponding with the established primary divisions of the academic year.

*Transfer Students.* When a student transfers from one North Carolina public institution of higher education to another, he/she is treated as a new student by the institution to which he/she is transferring and must be assigned an initial residence status classification for tuition purposes.

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## ACADEMIC INFORMATION AND REGULATIONS

<http://www.ncat.edu/~registra/>

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Each student is responsible for informing himself or herself of the academic regulations and requirements set forth in this Bulletin and for revisions of same as posted on campus bulletin boards or release in other official publications of the University. Failure to meet the requirements or comply with regulations because of lack of knowledge thereof does not excuse the student from meeting the academic regulations and requirements.

A student's program of study must be approved by his or her advisor, his or her chairperson or a member of the faculty in his or her major department at registration. Advisors will make every attempt to give effective guidance to students in academic matters and to refer students to those qualified to help them in other matters. However, the final responsibility for meeting all academic requirements for a selected program rests with the student.

### ADVANCED PLACEMENT

A student entering the University from secondary school may obtain advanced placement and college credit on the basis of performance on the College Entrance Examination Board Advanced Placement examinations. A score of three (3) or higher on any CEEB advanced placement examination will entitle the student to credit for the comparable University course as determined by the Director of Admissions in consultation with the chairperson of the appropriate department.

#### ADVANCED PLACEMENT

AP EXAMINATION	SCORE REQUIRED	HOURS GRANTED	UNIVERSITY COURSES SATISFIED
Art History	3	4	Art 224
Biology	3	4	Biology 100
Calculus AB	3	4	Math 131
Calculus BC	3	4	Math 131,132
Chemistry*	3	4	Chemistry 101, 102
Comparative Government & Politics	3	3	Political Science 310
Computer Science A	3	3	Computer Science Elective
Computer Science AB	3	4	Computer Science 160
English Language & Composition	3	3	English 100
	4	6	English 100, 101
English Literature & Composition	3	3	English 100
	4	6	English 100, 101
European History	3	6	History 303, 304
French Literature	3	6	FOLA 300, 301
German Language	3	6	FOLA 102, 103
Latin/Virgil	3	6	Foreign Language Elective
Latin/Catallus, Horace	3	6	Foreign Language Elective
French Language	3	6	FOLA 100, 101
Environmental Science	3	3	EASC 201
Spanish Language	3	6	FOLA 104, 105
Macroeconomics	3	3	Economics 301
Microeconomics	3	3	Economics 300
Music Theory	3	6	Music 101, 102
Physics B*	3	6	Physics 225, 226
Physics C*	3	8	Physics 241, 242

Psychology	3	3	Psychology 320
Spanish Literature	3	6	FOLA 320, 321
Studio Art/Drawing	3	3	Art Elective
Studio Art/General	3	3	Art 100
U.S. Government & Politics	3	3	Political Science 200
United States History	3	6	History 204, 205

\*Proficiency exam(s) required to earn credit for corresponding lab courses.

## COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)

### GENERAL EXAMINATION

	Minimum Acceptable Score	Course(s) and Credits Awarded		
		Department	Course #	Credits
English Composition with Essay	500	English	100, 101	6
Mathematics	500	Math	101, 102	6

## COLLEGE LEVEL EXAMINATION PROGRAM (SUBJECT EXAMINATION)

### CLEP Subject Exam

Accounting, Intro.	45	Accounting	221, 222	6
American Government	47	Poli. Science	200	3
American History I 1600-1877	46	History	204	3
American History II 1865-Present	46	History	205	3
American Literature	46	English	430, 431	6
Biology, General	49	Biology	100	4
Calculus, Intro.	41	Math	112	4
Chemistry, General	47	Chemistry	101, 102	8
College Algebra	46	Math	101	3
College Algebra-Trig.	45	Math	102	3
College Algebra-Trig.	45	Math	111	4
College French, Levels 1 & 2	42	FOLA	100, 101	6
College French, Levels 1 & 2	45	FOLA	100, 101	12
College German, Level-1	36	FOLA	102, 103	6
College German, Level-2	42	FOLA	102, 103, 422, 423	12
College Spanish, Levels 1 & 2	45	FOLA	300, 301 104, 105	6
College Spanish, Levels-2	50	FOLA	104, 105 320, 321	6 12
Infor. Systems & Computer App.	52	Bus. Admin.	361	3
Econ. (Macro), Intro.	44	Economics	301	3
Econ (Micro), Intro.	41	Economics	300	3
Edu. Psycho.	47	Ed. Psycho. & Guid.	435	3
English Lit.	46	English	220, 221	6
Human Growth & Development	45	Home Econ.	311	3
Human Growth & Development	45	Psychology	324	3
Psychology, Intro.	47	Psychology	320	3
Sociology, Intro.	47	Soc. & Social Service	100	3

## **COURSES OF STUDY**

A student should refer to the requirements of his/her respective department or school about his/her program of study and confer with his/her advisor whenever problems arise. The student is expected to follow the program outlined as closely as possible. This is very important during the first two years when he or she is satisfying basic degree requirements and prerequisites for advanced work.

## **DECLARATION OF MAJOR**

A student is required to declare a major at or before completing 45 semester hours. If a major is not declared, the student will not be allowed to register for the next semester.

## **REGISTRATION**

Registration is a time designated each semester to allow the student and his or her advisor to review the student's records and plan a course of study for the next semester.

The student also has an opportunity to discuss academic problems with the advisor. Registration helps to ensure that the courses requested on the registered schedule will be available to the student the following semester.

Any student who is enrolled in the University during the registration period is expected to register during the period designated for this purpose.

## **OFFICIAL REGISTRATION**

In order for a student to get credit for a course, he or she must be properly registered in that course. This means that the student must have gone through the registration procedures as outlined by the University. Further, the student must have paid all required tuition and fees.

## **LATE REGISTRATION**

A student is expected to complete enrollment (including the payment of all required fees) on the dates listed on the University Calendar. The payment of fees is part of the registration process. No student is eligible to attend classes until the required fees have been paid.

A student who fails to complete registration during the scheduled dates will be required to pay a late registration fee of \$20.00 beginning that date.

## **AUDITORS**

A regular student may audit a course by picking up the Audit Form from the Office of the Registrar. He or she must register officially for the course and pay the University Cashier.

Attendance, preparation, and participation in the classroom discussion and laboratory exercises shall be at the discretion of the instructor.

A student who audits courses is not required to take examinations and tests and he or she receives no credit. An auditor may not change his or her registration from audit to credit or from credit to audit after late registration ends.

## **COURSE LOAD**

According to Administrative Memorandum - Number 345, all full-time undergraduate students are expected to comply with the Board's 1993 Plan to Improve Graduation Rates by enrolling in an average of at least 15 semester hours per term in order to graduate in four years. The majority of North Carolina Agricultural and Technical State University's academic programs require 128 semester hours. In order to complete a 128 hour degree program



in 8 semesters, it will be necessary for students to carry a course load consisting of an average of 16 semester hours or complete 32 semester hours in an academic year. **Undergraduate students enrolled in twelve (12) or more semester hours are designated as full-time students and must pay full tuition and fees.** Full-time students usually carry from 15 to 18 semester hours. To enroll in more than 18 semester hours, students must get approval from the department head and the dean.

The maximum course load that students who are on academic probation may carry is twelve semester hours. The maximum course load for a student with a minimum GPA of 3.0 is 21 hours.

Undergraduate students on academic probation who have a cumulative grade point average at or above the minimum level that is required based on the number of semesters completed are exempted from the twelve hour course load limit.

### **DOUBLE MAJOR**

Students who desire to obtain a double major must file a double major form in the Office of the Registrar. Students who have double majors which involve two departments or two schools must satisfy the major requirements for each department or school. To graduate with a double major, students must complete requirements for both majors during the same semester or summer.

### **PREREQUISITES**

A course which is designated as prerequisite to another course indicates that the prerequisite is required before taking the next course.

Credit may be granted to indicate acceptable performance in the prerequisite course content by successful completion of standardized tests under the College Level Examination Program (CLEP) or successfully passing an examination adopted or prepared by the department granting the credit.

### **REPETITION OF COURSES**

A student who has received a failing grade in a required course at this University must repeat and pass the course unless the Dean of the College/School authorizes a substitute course. No single course may be repeated more than (2) two times. Course withdrawals do not count. Course drops do not count toward the attempts. A course completed with a grade of "C" or higher may not be repeated for a higher grade. Special authorization may be requested, as needed, from the Dean of the appropriate College/School to assist the student with completing requirements for graduation.

In order to officially repeat a course, the student must fill out the Course Repeat Form in the Office of the Registrar.

*Dual course credit is not allowed.* For example, only three (3) hours of credit are allowed for a three (3) hour course.

All grades earned by the student are a part of his/her official academic record and will appear on his/her transcript.

### **CORE REQUIREMENTS OF THE UNIVERSITY**

The University has approved the principle of greater flexibility in the course offerings that can be taken to satisfy the core requirements of the University. The areas in the core and the minimum semester hour requirements are as follows:

<b>Areas</b>	<b>Minimum Number of Semester Hours Required</b>	<b>Suggested Courses</b>
English	6	English 100, 101
Social Science	6	History 100, 101
Natural Science	6	Biological Science 100 Physical Science 100 Physics 101 Zoology 160 Chemistry 101, 102\
Humanities	6	Humanities 200, 201
Mathematics	6	Mathematics 101, 102
Health or Physical Education	2	

In order to graduate, each incoming student beginning with the 1995-1996 academic year will be required to complete a three-hour course of African American Studies and a three-hour course of Global Studies. These two courses can be met through a student's general education component, major course requirements, or free electives.

"Schools and departments with internal and external constraints, for example accreditation and certification, may also meet the African/African American and/or Global Studies requirements through a series of courses in which these issues are consistently integrated within the regular course material."

### **African American Courses**

1. ENGL-333: Survey of Afro-American Literature
2. MUSI-220: History of Black Music in America
3. MUSI-221: History of Jazz
4. FOLA-417: Literature of Afro-French Expression
5. HIST-215: History of Africa Since 1800
6. HIST-216: History of Africa Since 1800
7. HIST-310: The Afro-American in the United States to 1877
8. HIST-311: The Afro-American in the United States Since 1877 (A continuation of History 310)
9. HIST-320: African History as seen Through African Art and Archaeology
10. HIST-328: U.S. Slavery, 1619-1865
11. HIST-412: Modernization in Africa from 1920 to the Present
12. HIST-416: History of Black Culture in the United States
13. POLI-220: Blacks in the American Political System
14. POLI-445: Problems of Contemporary Africa
15. SOCI-314: Black Experience
16. SPCH-302: Minorities in Mass Media

### **Global Studies Courses**

1. AERO-421: National Security Forces in Contemporary American Society I
2. AERO-422: National Security Forces in Contemporary American Society II
3. ECON-505: International Economic Relations
4. ECON-537: International Marketing
5. FOLA-417: Literature of Afro-French Expression
6. FOLA-450: La Cultura Hispanica (Formerly Spanish 301, 2543)
7. HIST- 100: World Civilizations - Part I

8. HIST-101: World Civilizations - Part II
9. HIST-210: World Regional Geography
10. HIST-320: African History as seen through African Art and Archaeology
11. HIST-321: Cultural History, Ethnicity and Ethnographic Collections
12. HIST-322: Economic Geography
13. HIST-327: History of Latin America
14. HIST-330: History of the Far East to 1800
15. HIST-331: History of the Far East to 1800
16. HIST-332: The Modern Middle East
17. HIST-412: Modernization in Africa from 1920 to the Present
18. POLI-444: International Relations
19. POLI-445: Problems of Contemporary Africa

### **COURSE CREDIT BY EXAMINATION**

Credit may be earned by examination for any undergraduate course for which a suitable examination has been adopted or prepared by the department granting the credit. The student receives the grade "CE" and regular credit for the number of hours involved. However, the credit hours are excluded in computing the student's grade point average.

Credit may also be granted for the successful completion of standardized tests under the College Level Examination Program (CLEP) as approved for specific courses by University departments. There is no maximum amount of credit that a student may earn, but a student must complete a minimum of three semesters as a full-time student in residence at the University. Fees for CLEP and other standardized examinations are determined externally, rather than by the University. These credits are treated as transfer credits. Questions about the program may be addressed to the Director of Admissions or the Director of Counseling Services.

### **(Grading System)**

Grades are assigned and recorded as follows:

<b>Grade</b>	<b>Description</b>	<b>Quality Points</b>
A	Excellent	4
B	Good	3
C	Average	2
D	Below Average, but passing	1
F	Failure	0
I	Incomplete	
CE	Credit by examination	
AP	Advanced placement	
S	Satisfactory (non-credit courses)	
U	Unsatisfactory (non-credit courses)	
AU	Audit	
W	Withdrew	
P	Passing	

### **NORMAL CREDIT LOAD**

The normal load for an undergraduate student is sixteen (16) credit hours per semester. The minimum load for a full-time undergraduate student is twelve (12) credit hours per semester. The student is expected to make normal progress toward a degree. Normal progress means the

completion of sixteen (16) or more semester hours each semester with a 2.0 grade point average or higher for a full-time student. These sixteen (16) hours must consist of courses that count toward graduation for a full-time student.

### GOOD ACADEMIC STANDING

To be in good academic standing a full-time student must have the following minimum grade point average and the following semester hours passed:

<i>Semester Hours</i>	<i>Grade Point Average</i>
12	1.40
24	1.50
36	1.60
48	1.80
60	1.90
72	2.00
84	2.00
96	2.00

A student must achieve a minimum semester grade point average of 2.0 each semester enrolled beyond the sixth (6<sup>th</sup>) semester to be in good academic standing. A student is eligible to continue to work toward an undergraduate degree until he or she has attended eleven (11) semesters as a full-time student (not including summer session) or until he or she has attempted 152 semester hours. At that point the student becomes ineligible to continue at the University unless approved by the dean of the college or school.

A student is eligible to register if he or she has a minimum overall grade point average of 2.0 and has attended the University less than the maximum number of semesters allowed for the degree program.

### ACADEMIC WARNING

Freshman or sophomore students whose mid-semester grade point averages are less than 2.0 will be issued an **academic warning** indicated by a special notation on mid-semester grade reports issued from the Office of the Registrar. While being placed on **academic warning** does not become a part of the student's permanent record, the student is warned that failure to restore good academic standing by the end of that semester will result in academic probation.

### ACADEMIC PROBATION/SUSPENSION

A student who does not meet the above requirements will be placed on academic probation for the next semester of enrollment and is required to remove the deficiency prior to the beginning of the next semester. Failure to remove this deficiency during the probation semester will lead to a one semester suspension. A student who is suspended for a given semester may petition the dean to waive the suspension. The student who has been suspended and re-admitted with a waiver from his or her dean is required to make a minimum grade point average of 2.0 each semester or summer session following re-enrollment until such time as the minimum cumulative grade point average is at or above minimum appropriate progression requirement. A student who is on probation at the end of the spring semester may attend summer school and work toward removing his or her academic deficiencies.



A part-time undergraduate student is defined as one who enrolls in less than twelve (12) hours during a semester. The part-time student who fails to maintain the minimum average is subject to the actions prescribed for full-time students. A part-time student who enrolls in the University after an academic suspension must achieve a minimum semester grade point average of 2.0.

A part-time undergraduate student enrolled in a degree program must maintain the following minimum cumulative grade point average at the end of the cumulative semester hours indicated for a full-time student:

<i>Semester Hours</i>	<i>Grade Point Average</i>
24	1.50
48	1.80
72	2.00
96	2.00

Students are expected to be aware at all times of their academic status and to be responsible for knowing whether or not they are on academic probation. **Students on academic probation shall be limited to a maximum of twelve (12) semester hours of credit in a fall or spring semester and no more than four (4) semester hours in each session of summer school.**

Any student who is placed on academic suspension at the end of the spring semester may attend both sessions of summer school to remove academic deficiencies. However, if the suspended student does not raise his or her average to the required minimum, the student will remain suspended.

A student who fails to meet the minimum academic requirements after having been suspended and re-admitted is subject to permanent **academic dismissal**. There is an appeal procedure for academic dismissal.

**ACADEMIC DISMISSAL APPEALS**

Any student who has been dismissed from the University must be out for a minimum of one semester before an appeal may be made to the **Committee on Admission and Academic Retention**. Appeals are to be addressed to the Committee on Admission and Academic Retention in care of the Office of the Vice Chancellor for Academic Affairs.

**VETERANS AND PERSONS ELIGIBLE FOR VETERANS BENEFITS**

Veterans will be certified for the length of their program. Thereafter, certification will be made on a semester basis contingent upon their potential for completion of their program within a reasonable time. This may be determined by university counseling.

After eight semesters the student must maintain a minimum grade point average of 1.90. To graduate, however, the students must complete a minimum of 124 semester hours with a grade point average of 2.0.

Veterans will be certified annually for the length of their program. Thereafter, certification will be made on a semester basis, contingent upon their potential for graduation within a reasonable time as determined by University counseling.

## QUALITY POINTS

Quality points are computed by multiplying the number of semester hour credits by 4 for courses in which a grade of A is earned – by 3 for a grade of B; by 2 for a grade of C; by 1 for a grade of D. No quality points are given for a grade of F.

## GRADE POINT AVERAGE

The grade point average is obtained by dividing the total number of quality points earned by the total number of semester hours attempted.

## COURSE NUMBER AND CLASSIFICATION

Each course bears a distinguishing number which identifies it within the department and indicates, broadly, its level. The number system is as follows:

100-399, lower level courses primarily for freshmen and sophomores

400-599, upper level courses primarily for juniors and seniors

600-699, courses for undergraduate and graduate students

700-799, courses for graduate students and appropriate professional students' special programs

## COURSE SCHEDULING

To enhance the preparation of scheduling classes and the academic advisement process, each course has a scheduling designation relative to the grading period. This scheduling designation is provided: "F" for fall semester, "S" for spring semester, "M" for first session summer school, "J" for second session summer school, "I" for intersession and "D" for dual sessions.

## CLASSIFICATION OF STUDENTS

Students are classified on the basis of semester hours completed excluding remedial and deficiency courses. The following classification scale applies to all students regardless of enrollment date:

<i>Classification</i>	<i>Semester Hours Completed</i>
Freshman	0-29
Sophomore	30-59
Junior	60-89
Senior	90 or above

## CHANGE OF GRADE

A request for a change of grade, for any reason, must be made within one year following the date the original grade was assigned by the faculty member.

## GRADE APPEAL

A student may appeal the final grade earned in a course. Initially, the student should attempt to resolve the matter informally through the instructor of the course, the department chair and/or dean of the academic unit in which the grade was assigned. If the matter is not resolved through this level of interaction, then the student should consult the individual school/college on its written grade appeal policy. A student wishing to pursue a written appeal of a

grade must demonstrate a legitimate basis for the appeal. Grade appeals are final at the level of the school/college.

### **CHANGES IN SCHEDULE**

A change in a student's program may be made with the consent of his or her advisor or department chairperson. However, if a student's schedule is changed after the designated period for adding and/or dropping courses, the consent of the school dean is required.

The student must obtain and properly complete the Change of Schedule Form. This form is obtained from the Office of the Registrar and should be returned to that office.

### **CHANGING SCHOOLS/COLLEGES**

Students may transfer from one school/college of the University to another with the written approval and acceptance of the Deans of the schools/colleges involved. The proper forms on which to apply for such a change are to be obtained from the Office of the Registrar and executed at least six weeks prior to the beginning of the semester in which the student plans to transfer. When such a transfer is made, students must satisfy the current academic requirements of the school/college and/or department to which students' transfer.

### **WITHDRAWAL FROM THE UNIVERSITY**

A student who wishes or is asked to leave the University at any time during the semester shall complete and file official withdrawal forms. These forms may be obtained from the University Counseling and Testing Center. They should be completed and submitted to the Office of the Registrar.

Students who withdraw from the University within 15 calendar days of the beginning of the final examination period for the semester shall receive a "W" in all classes enrolled. Failure to execute and file these forms in a timely manner will result in a student incurring the penalty of receiving an "F" for each course in which he or she was enrolled during the semester in question.

### **RE-ADMISSION OF FORMER STUDENTS**

All students who withdraw from the University voluntarily, leave the University or are suspended, must complete a Readmission Application which can be obtained from the Office of the Registrar or on-line [www.ncat.edu](http://www.ncat.edu) under Registrar.

Before a student who voluntarily leaves or withdraws is re-admitted, his or her academic record is reviewed. If the student did not attain the minimum academic performance level for the number of semesters enrolled at the University, the request for re-admission may be denied.

Former students who have been dismissed from the University for failure to meet the scholastic eligibility requirements may appeal to the Committee on Admissions and Retention for a review of their case. The appeal should be addressed to the Committee in care of the Vice Chancellor for Academic Affairs.

The person should not present him or herself for re-enrollment until he or she has received a reply from the Committee. Appeals should reach the committee at least sixty (60) days prior to the beginning of the term in which the persons expect to register.

Former students whose attendance has been interrupted by the University for disciplinary reasons must apply to the Vice Chancellor for Student Affairs for a review of their case for possible re-admission.

## **FIVE YEAR READMISSION POLICY**

An undergraduate who has been academically dismissed can only be readmitted under the Five Year Readmission Policy.

Any undergraduate student who has not been enrolled at North Carolina Agricultural and Technical State University for at least five years (10 academic semesters) may be eligible for one readmission under the "Five Year Readmission Policy." This policy is subject to a student being able to complete degree requirements without exceeding 152 hours attempted.

Only courses in which a grade of "C" or better was earned will be counted toward graduation. This policy will not alter the student's original academic record.

The student's grade point average will begin at the time studies are resumed. Students must maintain a 2.00 GPA on courses taken after readmission to be eligible to continue. Degree requirements will be those in effect at the time the student re-enrolls.

Students who select the Five Year Readmission Policy will not be recognized as graduating with honors. Publication of honors and scholarships is made at commencement.

Students must have a curriculum plan that leads to graduation developed jointly with the department chairperson and approved by the school/college dean. This documentation must accompany the Readmission application.

The Five Year Readmission Policy must be exercised at the time of readmission to the University. Once exercised, this policy cannot be reversed.

## **INCOMPLETES**

Students are expected to complete all requirements of a particular course during the semester in which they are registered. However, if at the end of the semester a small portion of the work remains unfinished and should be deferred because of some serious circumstances beyond the control of the student, an "I" may be submitted.

Along with the recording of the incomplete grade, the instructor must also file with the head of the department the student's average grade and a written description of the work which must be completed before the incomplete is removed.

### ***Procedure for the Removal of an Incomplete***

An incomplete grade must be removed within SIX WEEKS after the beginning of the next semester. If the student has not removed the incomplete within the time specified, the Incomplete is automatically changed to an "F." Developmental, thesis and research courses are exempted from the six week time limit.

## **SEMESTER EXAMINATIONS**

A final examination will be required as a part of every course. An examination schedule showing the time and place of meeting of each course and section will be published each semester. Schedules so published will be followed without exception. Any changes in the examination schedule must be approved by the Office of Academic Affairs.

## **HONOR ROLL**

To encourage academic excellence, the University publishes a Dean's List at the end of each semester. Regular undergraduate students whose semester grade point average is 3.00 or higher shall be eligible for the Dean's List. Students making the Honor Roll must have



completed a total of 12 or more semester hours. The cumulative grade point average is 3.00 or higher based on the adjusted hours.

## **CLASS ATTENDANCE POLICY**

### ***Class Attendance***

The University is committed to the principle that regular and punctual class attendance is essential to the students' optimum scholastic achievement. An absence, excused or unexcused, does not relieve the student of any course requirement.

Regular class attendance is a student obligation, and a student is responsible for all the work, including tests and written work, of all class meetings.

### ***Instructor's Responsibility***

- 1) Description of attendance requirements should be stated in the course syllabus and announced in class, particularly at the beginning of each term. If class attendance is to affect a student's course grade, then a statement to that effect must be a part of the course syllabus distributed to each student.
- 2) Instructors will keep attendance records in all classes. Each instructor has the right to prescribe procedures as to how and when attendance will be taken.

### ***Student's Responsibility***

It is the responsibility of each student to learn and comply with the requirements set by the instructor for each class in which he or she is registered. The student should:

- 1) have knowledge of each instructor's attendance and monitoring practices for class absences during the term,
- 2) become familiar with all materials covered in each course during absences and makeup work of any work required by the instructor, and
- 3) initiate the request to make-up work on the first day of class attendance after the absence.

## **POLICY ON MAKE - UP OF REQUIRED COURSE WORK**

The administration, faculty and staff recognize that there are circumstances and events which require students to miss classes and require course work which may be performed or due on the day of the absence. Also, they recognize that required course work is needed to give each student an adequate performance evaluation. Therefore, whenever reasonable (and more specifically described below), students should be allowed to make up required work.

The following definitions will apply with respect to this policy:

- a. Required course work – All work which will be used in the determination of final grades, e.g. examinations, announced quizzes, required papers and essays, required assignments.
- b. Instructor – Person responsible for the course and providing instruction and evaluation.
- c. Permissible reasons for requesting make up of required work – Sickness (verification needed) – death of relatives (immediate family); participation in approved University related activities; acting in the capacity of a representative of the University (band, choir, sports related travel, etc.); extraordinary circumstances (court appearance, family emergency, etc.); require a signed statement. NOTE: Other reasons for requesting make up have required course work is not acceptable.

- d. Documentation – Verification of sickness requires signed statement of a physician or a duly authorized staff member of the Health Center. Verification of death requires signed statement from the Minister or Funeral Director. Verification of participation in University related activities requires signed statement from the Office of the Vice Chancellor for Academic Affairs. Verification of other reasonable circumstances; for example, court appearance, family emergency, etc. require a signed statement from an appropriate official (e.g., Court Official, parent or guardian, etc.).

The policy regarding make-up of required course work is as follows:

- (1) A student may petition an instructor to make up required course work whenever the student has a permissible reason for requesting make up of required course work.
- (2) A student will be required to present documentation which certifies absence constituting permissible reason.
- (3) Whenever possible, a student should consult with the instructor prior to an absence which will involve the failure to do required course work. Arrangements for make up should be discussed and agreed upon at this time.
- (4) A student must petition for make up of required course work on the first day that he returns to class.
- (5) If permission is granted to make up required course work, the instructor and the student should agree on an acceptable date for completion of missed required course work.
- (6) Failure to comply with item 4 may result in the denial to make up required course work.

**Instructors should schedule make up work at a time that is convenient to both the instructor and the student.**

### **GENERAL REQUIREMENTS FOR GRADUATION**

A candidate for a degree from North Carolina Agricultural and Technical State University must satisfy the following minimum requirements:

1. Choose a specific curriculum leading to a degree in one of the schools/colleges and complete the requirements of this curriculum;
2. Complete a minimum of 124 semester hours excluding deficiency courses and remedial work for the Bachelor's degree;
3. Complete the core requirements of the University in English, Mathematics, Natural Science, Social Science Humanities and Health or Physical Education for the Bachelor's degree;
4. Earn an average of two (2) grade points for every semester hour undertaken including hours passed or failed. After completing the number of credit hours required for graduation, if the student is deficient in grade points, he or she must take additional courses that have been approved by his or her academic dean to secure these points. The student must also obtain an average of 2.0 or more in his or her major field;
5. Complete a minimum of three semesters as a full-time student in residence at the University. This requirement includes the two semesters prior to the period when the student completes his/her requirements for graduation. At least one half of the credits in the student's major field must be earned at the University. Exception to either of

these provisions may be made upon the recommendation of the chairperson of the student's major department with the approval of the school dean.

6. Clear all academic conditions by the end of the semester preceding graduation.
7. Pay all University bills and fees;
8. File an application for graduation with the Office of the Registrar in accordance with the schedule below:
  - A. May graduation — by last day for late registration for spring semester
  - B. Summer graduation — by the end of the second week of class in the summer session
  - C. December graduation — by the last day for the late registration for the fall semester

### **GRADUATING WITH HONORS**

Undergraduate candidates who complete all requirements for graduation in accordance with the following stipulations earn the following honors: (1) Those who maintain a general average within the range of 3.00 to 3.24 will receive CUM LAUDE, (2) those who maintain a general average within the range from 3.25 to 3.49 will receive MAGNA CUM LAUDE, and (3) those who maintain a general average within the range of 3.50 to 4.00 will receive SUMMA CUM LAUDE.

All hours attempted are included in the grade point average computation for honors. This means that when a course is repeated, both grades are added in the computation. For a transfer student a minimum of 60 percent of the credit hours required for a degree program must be earned at North Carolina Agricultural and Technical State University to be considered for honors. For example, if the program requires a total of 128 credit hours, 77 of those hours must be earned at North Carolina Agricultural and Technical State University. Publication of honors and scholarships is made at commencement.

### **COMMENCEMENT PARTICIPATION**

Students who complete degree requirements during the summer session or during the fall semester are invited to participate in the commencement exercises along with students who complete degree requirements during the spring semester.

Students "who have been cleared for graduation" are those students who have applied for graduation during the spring semester and who are currently enrolled in those required courses remaining to complete their degrees.

### **GRADUATING UNDER A GIVEN CATALOGUE**

A student may expect to earn a degree in accordance with the requirements of the curriculum outlined in the catalogue in force when he or she first entered the University, provided the courses are being offered. Moreover, he or she must complete these requirements within six years. In addition, he or she may graduate under any subsequent catalogue published while he or she is a student. If a student elects to meet the requirements of a catalogue other than the one in force at the time of his or her original interest, he or she must meet all requirements of the catalogue he or she elects.

### **SECOND BACCALAUREATE DEGREE**

A student who has received a bachelor's degree from North Carolina Agricultural and Technical State University or another accredited college or university may enroll in a pro-



gram leading to a second degree at the same level providing (1) the major field is different from that of the first degree and (2) the appropriate application for admission or re-admission is filed and approved.

Students seeking a second baccalaureate degree and received the first degree must (1) complete a minimum of twenty-four (24) semester hours beyond those applied to the first or previous degree, excluding transfer credits or substitutions and dependent upon departmental requirements, (2) be in residence for a minimum of two (2) semesters as a full-time student if the first or previous degree was not earned at North Carolina Agricultural and Technical State University, and (3) achieve a cumulative minimum point average of 2.0 for all hours attempted for the degree.

## **GRADES**

As soon as grades are determined at the end of each semester or summer term, grades are available on-line, [www.ncat.edu](http://www.ncat.edu), AGGIE ACCESS.

## **PRIVACY OF STUDENT RECORDS**

The University insures students access to their official academic records but prohibits the release of personally identifiable information, other than "directory information," from these records without their permission, except as specified by public law 93-380. "Directory information" includes: Student's name, address, telephone number, date and place of birth, school, major, sex, marital status, dates of attendance, degree received, honors received, institution(s) attended prior to admission to North Carolina Agricultural and Technical State University, past and present participation in officially recognized sports and activities, and physical factors. Public Law 93-380 further provides that any student may, upon written request, restrict the printing of such personal information relating to himself or herself as is usually included in campus directories. A student who desires to have "directory information" withheld must submit a written request to the Office of the Registrar one week before the beginning of classes for the semester or session in which he or she is enrolled.

## **ACCESS TO STUDENT RECORDS**

1. The policy for the administration of student academic records is in accordance with the Family Educational Rights and Privacy Act of 1974 as amended.
2. Students have the right to inspect and review any and all official records, files, and data directly related to them.
3. A student who believes that his or her record contains inaccurate or misleading information shall have an opportunity for a hearing to challenge the content of the record, to insure that the record is not inaccurate, misleading, or otherwise in violation of his or her privacy or rights, and to provide an opportunity for the correction or deletion of any such inaccurate, misleading, or otherwise inappropriate data contained therein or include the student's own statement of explanation.
4. The University will comply with requests from his or her record within a reasonable period of time and not later than (30) days after the request is received.
5. The release of academic records requires the written permission of the student, except as provided by Public Law 93-380. Transcripts are not issued to a student who has not met his or her financial obligations to the University.



6. Copies of the "University's Statement" concerning access to students records are available in the Office of the Registrar as well as the office of each school dean and department chairperson.

### **CHANGE OF NAME AND ADDRESS**

It is the obligation of every student to notify the Office of the Registrar of any change in name or address. Failure to do so can cause serious delay in the handling of the student's records and in notification of emergencies at home. To change a name a student must first have a legal court document.

### **TRANSCRIPTS OF RECORDS**

Requests for transcripts of students' records should be addressed to the University Registrar. The cost is \$2.00 per copy.

### **INDEBTEDNESS TO THE UNIVERSITY**

No diploma, certificate or transcript of a record will be issued to a student who has not made a satisfactory settlement with the cashier for all indebtedness to the University. A student may not be permitted to attend classes or final examinations after the due date of any unpaid obligation.

### **PLAN TO IMPROVE GRADUATION RATES**

In response to legislation enacted by the General Assembly in 1992, the Board of Governors has adopted a "Plan to Improve Graduation Rates in the University of North Carolina." The plan includes policies that are aimed at decreasing the average time taken for completion of degrees.

#### **What must a student do to graduate in four years?**

Full-time undergraduate students are expected to make scheduled progress toward graduation. Thus, it should be possible for those students to complete most baccalaureate degree programs within four academic years or the equivalent.

#### **What must the University do to expedite student progress?**

Effective fall 1995, baccalaureate degree programs shall be limited to no more than 128 semester hours. Any program that requires 135 semester hours or more shall be officially designated as a five-year baccalaureate program.

Also, the University will make every effort to schedule a sufficient number of course sections and/or alternate courses to assist students in meeting their graduation requirements. A new registration/advising system is being tested which will provide progress reports to students and advisors.

#### **What is the graduation rate at the University?**

Our data show that 39.1 percent of the first-time full-time freshmen who entered North Carolina Agricultural and Technical State University in Fall 1986 have received a baccalaureate degree from this institution or another UNC institution as of Fall 1992. In addition, another 9.9 percent were enrolled at this or another UNC institution in pursuit of their baccalaureate degrees as of Fall 1992.

#### **Why do some students take longer?**

Many students carry fewer credits because they work; others interrupt their education for personal reasons. Some students take extra time completing special courses to improve their

academic skills. Many students change majors, major in more than one field, or enroll in a major that requires more than 124 semester hours for graduation. A significant number of students also take extra time to pursue related educational experiences. Finally, some students take extra time for social reasons.

**Working students.** Nearly 20 percent of our students participate in the college work study program. Those students work an average of 15 hours each week. Over 30 percent of our undergraduate students work off campus. Students who work off campus average more than 30 hours a week while taking fewer hours than the on-campus students.

Many students work to help pay for school expenses. Some students work to avoid heavy loan debt upon graduation, and others work to enhance their career prospects after graduation. However, far too many of our students are working so that they can have automobiles, clothes, apartments, and lifestyles which are not conducive to succeeding in college.

The Piedmont Triad is an area in which college students may easily find work. Students who work are likely to carry fewer semester hours and are more likely to drop out of school for a period of time.

**Student retention rate.** From 1986-1991, the percentage of freshmen on the North Carolina A&T State University campus who returned as sophomores has remained around 77 percent except for 1989 when it reached 86 percent. These figures are up from the mid 60 percent in earlier years. We anticipate that this increased retention of first-year students should be reflected in higher graduation rates over the next few years.

### **What must a student do to graduate faster?**

The students **must** put education **first**. They should enroll in and complete at least 16 hours per semester. They must take advantage of courses offered in summer sessions or independent study. They should seek the advice of their assigned academic advisors who know the degree and major requirements.

The University of North Carolina requires North Carolina Agricultural and Technical State University to publish the following statement with the above material:

Our data show that 46.0 percent of the first-time full-time freshman students who entered North Carolina Agricultural and Technical State University in Fall 1988 have received a baccalaureate degree from this institution or another UNC institution as of Fall 1994. This information is provided pursuant to requirements of the Student-Right-to-Know and Campus Security Act of 1990.

## **ACADEMIC DISHONESTY POLICY**

North Carolina Agricultural and Technical State University is committed to a policy of academic honesty for all students. Examples of Academic Dishonesty include but are not limited to:

- Cheating or knowingly assisting another student in committing an act of academic dishonesty;
- Plagiarism (unauthorized use of another person's words or ideas as one's own) which includes but is not necessarily limited to submitting examinations, theses, reports, drawings, laboratory notes or other materials as one's own work when such work has been prepared by another person or copied from another person.
- Unauthorized possession of examinations or reserve library materials, destruction or hiding of source materials, library materials, or laboratory materials or experiments or any other similar action;

- Unauthorized changing of grades or marking on an examination or in an instructor's grade book, or such change of any grade record;
- Aiding or abetting in the infraction of any of the provisions anticipated under the general standards of student conduct; or
- Assisting another student in violating any of the above rules.

A student who has committed an act of academic dishonesty has failed to meet a basic requirement of satisfactory academic performance. Thus, academic dishonesty is not only a basis for disciplinary action but may also affect the evaluation of the student's level of performance. Any student who commits an act of academic dishonesty is subject to disciplinary action as defined below.

In instances where a student has clearly been identified as having committed an academic act of dishonesty, the instructor may take appropriate punitive action including a loss of credit for an assignment, an examination or project, or award a grade of "F" for the course subject to the review and endorsement of the chairperson and the dean. Repeated offenses can even lead to dismissal from the University.

## **STUDENT APPEALS ON ACADEMIC DISHONESTY**

A student who feels that he or she has been unfairly treated as a result of an academic dishonesty matter may appeal the action in writing to the University Judicial Tribunal. The written notice of appeal must be submitted within one week (seven calendar days) of the date of the incident. The student should refer to the section on Appellate Procedures in the *Student Handbook*.

## **DISRUPTIVE BEHAVIOR IN THE CLASSROOM**

*(UNC-GA Policies for Students-Adopted by BOG October 26, 1970)*

The instructor may withdraw a student from a course for behavior he deems to be disruptive to the class. The grade assigned will be "W" if the behavior occurs before the deadline for dropping a course without academic penalty, and the instructor has the option of giving a "W" or a "F" if the behavior occurs after the deadline.

### **1. BINDING PROCEDURES FOR INSTRUCTORS**

The instructor must provide an opportunity for the student to be heard. In providing this opportunity, the instructor must follow the procedure described below:

1. The student should be notified in writing at the next class attended that the instructor proposes to drop the student from the course for disruption of the class, and the instructor should provide the student with written instructions regarding the time and place for a meeting with the instructor. A copy of this written notification must be sent to the instructor's department head at the same time.
2. A time limit of five working days (M-F) from the time written notification is given for the student's opportunity to be heard by the instructor.
3. The date of notification establishes whether the withdrawn student will be given a "W" or "F." "W" is appropriate before the 8-week drop date and either "W" or "F" is appropriate after that date, at the instructor's discretion.
4. The instructor may suspend the student from class until the instructor takes final action to withdraw the student from class or to allow the student to continue in the class. The final decision to withdraw or continue the student is the instructor's.

5. Either party in the resolution of this dispute may invite one other person of the university community to be present as an observer.

## **II. STUDENTS' RIGHT TO APPEAL**

If the student wishes to appeal the instructor's decision to withdraw the student from class, he/she should follow the academic appeal procedures outlined in the section on grading in the *Undergraduate Bulletin*.

### **CELL PHONE POLICY**

The use of cell phones inside the classroom during the classroom period is prohibited. Please be advised that placing or receiving calls as well as conversing on cell phones during the conduct of a class shall be considered as disruptive behavior for students and unprofessional behavior for faculty and staff.



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## **SCHOOL OF AGRICULTURE AND ENVIRONMENTAL SCIENCES**

<http://www.ag.ncat.edu/>

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**Alton Thompson, Dean**

**Donald McDowell, Associate Dean for Academic Programs**

**Carolyn Turner, Associate Dean for Research**

**M. Ray McKinnie, Associate Dean for Cooperative Extension**

### **OBJECTIVES**

The School of Agriculture and Environmental Sciences is organized in the land-grant university tradition where programs of resident instruction in the food, agricultural, and environmental sciences, as well as closely related areas are offered. Agricultural Research and Cooperative Extension completes the land grant institution triumvirate. Formal programs of resident instruction through curricula in agriculture have served the state's citizens successfully for over 110 years.

Instructional programs provide a strong foundation in the natural sciences, social sciences and economics, which support curricula in agricultural and family and consumer sciences. The faculty, trained in the basic and applied sciences pertaining to agriculture and related areas, consists of scholars whose contributions to instruction, research, and cooperative extension are recognized well beyond the reaches of this University.

### **MISSION**

The School of Agriculture and Environmental Sciences will provide opportunities for individuals from diverse backgrounds to achieve excellence through intellectual and technological advancements in the food, agricultural, environmental and life sciences that will cultivate and enhance their potential for global leadership, productivity and competitiveness.

### **VISION**

The School of Agriculture and Environmental Sciences will help foster the emergence of North Carolina A&T State University into a leading comprehensive University through the development and expansion of premiere teaching, research and extension programs in food, agricultural, environmental and the life sciences.

### **AGRICULTURAL RESEARCH PROGRAM**

Organized research is conducted in the food, agricultural, and environmental sciences by research faculty with joint appointments in the instructional and research programs. Much of the research activity is sponsored by the United States Department of Agriculture. It is conducted on the University Farm in the Complex for Agricultural Research and Extension Development (CARED), and in on-campus laboratories where investigations include such areas as food safety, agromedicine, wetlands, water quality, biotechnology, international trade, rural development, animal sciences, plant science, landscape architecture and design, human nutrition, housing, food science, and animal health.

### **COOPERATIVE EXTENSION PROGRAM**

Cooperative extension is an outreach educational program which provides information and assistance in a broad range of subjects to individuals, families, and organized groups in

rural and urban areas of the state. The Cooperative Extension Program at North Carolina A&T State University is an integrated function of the statewide cooperative extension service. North Carolina State University, in Raleigh, North Carolina, and North Carolina A&T State University collaborate in providing services to the people in the State of North Carolina.

## **INTERNATIONAL AGRICULTURAL PROGRAM**

The International Agricultural Program involves all departments in the School of Agriculture and Environmental Sciences and relates to the University's Office of International Programs through the Office of the Coordinator for International Agriculture.

In overseas locations, research, teaching, and community out-reach are conducted by faculty in association with long-term development assistance projects. Additionally, faculty share their expertise through short-term assignments for consultation in various overseas settings.

## **INSTRUCTIONAL PROGRAMS**

### *Departmental Organization:*

The School of Agriculture and Environmental Sciences is organized into four departments: (1) Agribusiness, Applied Economics and Agriscience Education, (2) Animal Sciences, (3) Human Environment and Family Sciences, and (4) Natural Resources and Environmental Design. Advisory groups associated with various professions represented by the School continually review curricula and programs. The School sets high expectations and provides students with resources and support they need to take charge of their education.

### *Requirements for Admissions:*

The requirements for admission to the School of Agriculture and Environmental Sciences are the same as the general requirements for admission to the University. Some programs have higher requirements. Please see the specific Department of interest.

### *Requirements for Graduation:*

The requirements for graduation for the Bachelor of Science Degree are as follows:

1. The student must have satisfied the course requirements of an approved curriculum in an organized department administered by the School of Agriculture and Environmental Sciences.
2. The student must have earned a cumulative grade point average of at least a "C" in his or her major courses and in his or her overall academic program.
3. Students planning to teach secondary agricultural education, family and consumer sciences education, and child development early education/family studies (B-K) must also meet the teaching requirements prescribed by the School of Education.

### *Curricula:*

Departments of the School of Agriculture and Environmental Sciences provide several program options through curricula leading to the Bachelor of Science Degree. These program options accommodate specialization in several areas of the food, agricultural, environmental and life sciences. In addition, the School has several enrichment programs available to our students and many students participate in summer internships and cooperative education programs which enable them to receive academic credit for career-related experiences. The School encourages involvement in co-curricular activities as a means of developing communication and leadership skills.

The Master of Science Degree is offered in agricultural education, animal science, plant and soil science, agricultural economics, and foods and nutrition. (For further details please consult the graduate school bulletin.)

### **ACCREDITATION**

All of the programs in the School of Agriculture and Environmental Sciences that have accrediting organizations have been accredited. They are as follows:

- The Bioenvironmental Engineering Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.
- The Didactic Program is approved by the Commission on Accreditation/Approval, for Dietetics Education of the American Dietetic Association, a specialized body recognized by the Commission on Recognition of Post Secondary Accreditation and the United States Department of Education.
- The Human Environment and Family Sciences Program is accredited by the American Association of Family and Consumer Sciences.
- The Landscape Architecture Program is accredited by the American Society of Landscape Architecture Accreditation Board.
- The Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and the North Carolina State Department of Public Instruction.

### **CAREER OPPORTUNITIES**

The School of Agriculture and Environmental Sciences provides professional education for a wide range of career opportunities in the food, agricultural, environmental and family and consumer sciences. Students prepare for careers in business, government, public service agencies, retail and service industries, health-related fields, biomedical and biotechnology organizations, financial institutions, youth development agencies, conservation and environmental organizations, research, extension and education. Students are also provided with an appropriate background for graduate and professional programs.

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## **Department of Agribusiness, Applied Economics and Agriscience Education**

<http://www.ag.ncat.edu/agribusiness>

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**Anthony Yeboah, Interim Chairperson**

### **OBJECTIVES**

The Department of Agribusiness, Applied Economics and Agriscience Education offers programs leading to the Bachelor of Science and Master of Science in Agricultural Economics and Agricultural Education. Students who pursue the Bachelor of Science in Agricultural Economics may concentrate in Agribusiness. Students who pursue the Bachelor of Science degree in Agricultural Education may concentrate in Secondary Education or Agricultural Professional Service. In addition, students may take prescribed courses in Rural Sociology and Sociology.

The objectives of the programs are to train students to understand and apply the educational concepts and analytical tools of economics and business in a systematic method in order to identify, analyze, and resolve management problems of the farm, agribusiness firms, rural communities, and government agencies, as well as preparing students for further study in Agricultural Economics and/or Education.

The Agricultural Education program is accredited by the National Council for Accreditation of Teacher Education and the North Carolina State Department of Public Instruction for the preparation of teachers in agriculture in the public school system. Agricultural Education majors in both the Secondary Education and Agricultural Professional Service study tracks are expected to complete a second major concentration in a basic academic discipline to include 24-27 semester credit hours. The second major concentration requirement consists of a combination of specified technical classes in addition to classes taken from the general education and technical agriculture core as determined by the student's advisor. The major options available include agricultural science, animal science, agribusiness and marketing, agricultural communications, natural and environmental science, plant and soil science, and rural sociology.

### **DEGREES OFFERED**

Agricultural Economics – Bachelor of Science

Agricultural Economics (Agribusiness) – Bachelor of Science

Agricultural Education (Secondary Education) – Bachelor of Science

Agricultural Education (Agricultural Professional Service) – Bachelor of Science

Agricultural Education – Master of Science\*

Agricultural Economics – Master of Science\*

*\*See the Graduate School Bulletin*

Interdisciplinary certificate programs are offered to students enrolled in Bachelor of Science programs at the University. Areas of specialization include Entrepreneurship (18 credit hours), Biotechnology (18 credit hours) and Waste Management (18 to 20 credits hours).

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree program is based upon the general admission requirements of the University.



## **DEPARTMENTAL REQUIREMENTS**

Undergraduate majors in Agricultural Economics and Agricultural Education must complete 127 semester hours of University courses. Students must earn an average grade of "C" in all Agricultural Education or Agricultural Economics courses in order to meet the major field requirements. Agricultural Economics majors must take a minimum requirement of 37 semester hours in Agricultural and General Economics. Agricultural education majors must earn a minimum grade point average of 2.8 to be admitted to the teacher education program, in addition to other admission requirements.

As mandated by the North Carolina State Department of Public Instruction, all candidates for teacher licensure will need to show evidence of computer competency. A basic skills test will need to be passed. Additionally, students must produce an electronic portfolio showing advanced technology for teaching skills during their program of study. The University, through course work, will provide opportunities for students to produce materials necessary to fulfill the technology portfolio requirement.

## **TEACHER EDUCATION PROGRAM**

The goals and objectives of the Teacher Education Program in agricultural education, as mandated by the National Council for Accreditation of Teacher Education (NCATE) and the North Carolina State Department of Public Instruction (SDPI), address the development of competencies in the areas of animal science, soil science, plant science, agricultural and natural resources, horticulture, agricultural economics, agricultural mechanics, and agricultural communication. The goals of the program are twofold and are listed below:

1. Develop an understanding of and appreciation for teaching agricultural education; and
2. Develop competencies needed by individuals to teach agriculture in North Carolina public secondary schools.

The fourteen objectives of the agricultural education teacher preparation program are listed below:

1. To promote the agricultural education program in secondary schools; to meet the needs and interests of students and to satisfy employment demands;
2. To plan for effective public relations;
3. To plan for effective and comprehensive instruction;
4. To manage the classrooms and laboratories effectively;
5. To aid students in making career decisions;
6. To evaluate vocational agriculture programs and student progress;
7. To advise and manage the Future Farmers of America (FFA) as an integral part of instruction;
8. To extend learning experiences for students beyond the classroom through Supervised Occupational Experience Program;
9. To plan and conduct a program of career exploration and guidance and provide hands-on learning experiences in technical agriculture including animal science, soil science, plant science, agricultural and natural resources, agricultural economics and agricultural mechanics;
10. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural production occupations and/or to pursue further training in the subject area;

11. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural mechanics occupations and/or pursue further training in the subject area;
12. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural and natural resources occupations and/or pursue further training in the subject area;
13. To plan and conduct a program to develop knowledge and skills needed for job entry into forestry occupations and/or pursue further training in the subject area;
14. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural products and processing occupations and/or pursue further training in the subject area.

### CAREER OPPORTUNITIES

Students who successfully complete programs in Agricultural Economics or Agricultural Education are prepared for careers in teaching, supervision in schools and colleges, agricultural extension, agricultural-related business firms and industries, trade and professional associations, government and private research firms, government services (legislative, administration, or professional), as well as for further study for advanced degrees.

### REQUIRED MAJOR COURSES FOR AGRICULTURAL ECONOMICS AND AGRIBUSINESS

AGEC 130	ECON 201	AGEC 432
AGEC 240	ECON 410	AGEC 434
AGEC 300	ECON 420	AGEC 436
AGEC 330	AGEC 405 or ECON 305	AGEC 675
ECON 200	AGEC 406 or ECON 310	

*A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.*

### CURRICULUM GUIDE FOR AGRICULTURAL ECONOMICS

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEC 130	1	ENGL 101	3
ENGL 100	3	HIST 101	3
HIST 100	3	MATH 131 or 112	4
MATH 111	4	CHEM 100	4
BIOL 100	4	Elective (Free)	<u>3</u>
PHED 200	<u>2</u>		17
	17		

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 201	3	ENGL 200	3
ECON 200	3	ECON 201	3
AGEC 300	3	AGEC 330	3
AGEC 240	3	FOLA <sup>1</sup>	3
FOLA <sup>1</sup>	3	ANSC 211	<u>3</u>
NARS 110	<u>3</u>		15
	18		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ANSC 451	3	ECON 420	3
ECON 410	3	AGEC 406	3
AGEC 405	3	AGEC 436	3
AGEC 434	3	SPCH 250	3
AGEC 432	3	Elective (Major Area) <sup>2</sup>	3
	15		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEC 638	3	Electives (Major Area) <sup>2</sup>	3
AGEC 675	3	Elective (Free)	6
Elective (Free)	3	Electives (BUAD or MATH) <sup>3</sup>	6
Electives (BUAD or MATH) <sup>3</sup>	6		15
	15		

Total Credit Hours: 127

<sup>1</sup> FOLA 100 Elementary French I or FOLA 104 Elementary Spanish I, FOLA 101 Elementary French II or Elementary Spanish II

<sup>2</sup> AGECE 440 Resource Economics, AGECE 599 Independent Study

<sup>3</sup> BUAD 341 Introduction to Management Information Systems, BUAD 422 Management Concepts, BUAD 430 Marketing Concepts, BUAD 435 Selling and Sales Management

## CURRICULUM GUIDE FOR AGRICULTURAL ECONOMICS

### (Agribusiness)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEC 130	1	ENGL 101	3
ENGL 100	3	HIST 101	3
HIST 100	3	MATH 131 or 112	4
MATH 111	4	CHEM 100	4
BIOL 100	4	BUAD 220	3
PHED 200	2		17
	17		

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ENGL 201	3
ECON 300	3	ECON 301	3
SPCH 250	3	AGEC 330	3
AGEC 300	3	ANSC 211	3
NARS 110	3	AGEC 405 or ECON 305	3
AGEC 240	3		15
	18		

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEC 432	3	ACCT 222	3
AGEC 434	3	PSYC 320	3
ACCT 221	3	ECON 420	3
ECON 410	3	ANSC 451	3
AGEC 406 or ECON 310	3	Elective (Free)	3
	15		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEC 436	3	BUAD 453	3
BUAD 461	3	BUAD 462	3
AGEC 675	3	Electives (Major Area) <sup>1</sup>	3
AGEC 640	3	Elective (Free)	<u>3</u>
Elective (Free)	<u>3</u>		15
	15		

Total Credit Hours: 127

<sup>1</sup>AGEC 446 *Financial Management of Agribusiness Firms* or BUAD 422 *Management Concepts*

## COURSE DESCRIPTIONS IN AGRICULTURAL ECONOMICS

### Undergraduate

#### **AGEC 130. Survey of the Food and Agribusiness Industries** **Credit 1(1-0)**

This course provides an introductory overview of the characteristics, scope and functions of the U.S. food and fiber production/processing/distributing system such as, showing the relationships of input supply, farm production, and product processing - distribution-marketing complex, and their role in meeting food and fiber needs of people; and identification of possibilities and requirements for training and services. (F)

#### **AGEC 240. Introduction to Computers in Agribusiness** **Credit 3(3-0)**

This course is designed to familiarize students with the growing role of computers as a management aid in agribusiness. Topics covered include: electronic spreadsheets, word processing, data base management, telecomputer communication, flow charting, etc. Emphasis will be placed on the application of software to agribusiness and agricultural economics analysis. (F)

#### **AGEC 330. Introduction to Agricultural Economics** **Credit 3(3-0)**

An application of the fundamental principles of economics to agricultural production, marketing, land tenure, leasing arrangements, and financing and related economic problems will be included in this course. (S)

#### **AGEC 405. Statistical Methods in Agricultural Economics I** **Credit 3(3-0)**

This course emphasizes statistical methods with special applications to agricultural problems. The statistical table, ratios, percentages, bar charts, line charts, and frequency distribution are used as analytical tools. (DEMAND)

#### **AGEC 406. Statistical Methods in Agricultural Economics II** **Credit 3(3-0)**

This course emphasizes statistical methods with special applications to agricultural problems. The time series analysis, sampling theory, analysis of variance, and simple correlation are used as analytical tools. This course is a continuation of AGECE 644. (DEMAND)

#### **AGEC 432. Elements of Farm Management** **Credit 3(3-0)**

Principles, which govern the effective organization and operation of the farm firm, will be covered. (F)

#### **AGEC 434. Marketing Agricultural Products** **Credit 3(3-0)**

This course emphasizes the principles and practices of marketing as applied to farm commodities. Form, place, time and possession utility, the ultimate consumer's market, the agricultural industries market, the middleman system, exchange market operation and future contracts, price determination, reducing marketing costs will be examined. Visits will be made to local markets. Prerequisite: AGECE 330. (F)



**AGEC 436. Agricultural Prices****Credit 3(3-0)**

Information regarding agricultural price changes, index numbers, price determination, seasonal and cyclical price movements, storage problems, methods of controlling extreme price fluctuations, and government price policy will be covered. (S)

**AGEC 440. Resource Economics****Credit 3(3-0)**

This course provides analysis of economic problems of resources use and management; perception of and definition of problems in terms of allocation mechanism; and analysis of economic relationships over time and market externalities with emphasis on welfare implications. Prerequisite: ECON 300. (S)

**AGEC 442. Cooperative Marketing****Credit 3(3-0)**

This course covers early cooperative movements, principles of cooperatives, importance of cooperatives in the United States, problems of organization, management and operation of cooperative endeavors by farmers in buying and selling. Prerequisites: AGEC 330 and 334. (DEMAND)

**AGEC 444. Agribusiness Marketing Analysis****Credit 3(3-0)**

This course is designed to develop an understanding of, and skill in, the marketing decision-making process. Emphasis will be placed on the competitive marketing environment and the analytical tools needed by the firm to make sound strategic marketing decisions. Case studies and marketing simulation games will be used when appropriate. (DEMAND)

**AGEC 446. Financial Management of Agribusiness Firms****Credit 3(3-0)**

Principles and techniques of management of short-term and long-term capital will be covered. Financial analysis, and special problems related to the acquisition and use of funds will also be examined. Case studies and financial simulation games will be used when appropriate. (F)

**AGEC 530. Economics of Food Distribution****Credit 3(3-0)**

This course covers the description of market structures and operations in the processing and wholesale and retail distribution of food and the effect of industrial organization and government regulations on the efficiency of the market and consumer demand for food. (DEMAND)

**AGEC 599. Independent Study I****Credit 3(3-0)**

This course is designed to provide academic credit to students of advanced undergraduate standing who are on cooperative internships or apprenticeship programs when the nature of the assignment warrants such credits. (F; DEMAND and Consent of the instructor)

**Advanced Undergraduate and Graduate****AGEC 630. Rural Development Seminar****Credit 3(3-0)**

This course will discuss current issues in rural and agricultural development in the U.S. and in developing countries. There will be a review and discussion of current literature and reports or proposals on rural or agricultural development programs and policies. Prerequisite: Consent of the department chairperson. (DEMAND)

**AGEC 632. International Agricultural Trade Policy****Credit 3(3-0)**

This course includes a review of economic and welfare theory applications relative to trade of agricultural commodities. Topical issues include the analysis of linkages among commodity programs, fiscal and trade policies for the U.S. and other countries in an interdependent world, development of an understanding of international institutions and their role in formulating elements of strategic agricultural trade policy. Prerequisite: Consent of instructor. (S)

**AGEC 634. International Agribusiness Marketing****Credit 3(3-0)**

This course will examine and analyze the series of problems, issues, policies, regulations and procedures relevant to the global marketing of agricultural and related commodities by agribusiness firms. Emphasis will be on combining firm-level agribusiness marketing concepts with international agribusiness marketing and export management practices including the

development of international agribusiness marketing plans and case studies from international agribusiness firms. Prerequisite: Consent of instructor. (S)

**AGEC 635. Economic Geography of World Food and Resources** **Credit 3 (3-0)**

The objective of this course is to acquaint students from across the University and hopefully those outside the University with the economics and geography of the world's human and natural resources as they affect food and fiber production, resource use, and economic welfare around the world. Content is drawn from many disciplines that study the natural world and investigate forces that affect the availability of resources, the dynamics of populations, the behavior of people, and different nation's policies towards food, resource use, trade, and the environment. The overall theme of the course is on the hard decisions and trade-off necessary to meet growing needs with fixed resources in a stressed natural environment. Prerequisite: Consent of the instructor. (S)

**AGEC 638. Special Problems in Agricultural Economics** **Credit 3(3-0)**

This course is designed for students who desire to work out special problems in the field of agricultural economics; problem definition, formulation and investigation will be emphasized. Prerequisite: Consent of the department chairperson. (F)

**AGEC 640. Agribusiness Management** **Credit 3(3-0)**

Methods of research, plans, organization, and the application of management principles will be covered. Part of the student's time will be spent in consultation with agribusiness firms. Prerequisite: Consent of the department chairperson. (F)

**AGEC 641. Special Problems in Agribusiness Management** **Credit 3(3-0)**

This course relies heavily on the "Harvard Case Studies Approach" to make decisions and solve problems faced by agribusiness managers. Also, students will be exposed to quantitative techniques for analyzing and solving problems confronting the firm. Emphasis is placed on applying theoretical concepts to the real world decision-making environment. Prerequisite: AGECE 640 or consent of instructor. (DEMAND)

**AGEC 642. Seminar in Agricultural Economics** **Credit 3(3-0)**

Discussion of reports and an appraisal of current literature on agricultural problems will take place. Prerequisite: Consent of the department chairperson. (DEMAND)

**AGEC 648. Appraisal and Finance of Agribusiness Firms** **Credit 3(3-0)**

The principles of land evaluation, appraisal and taxation will be examined. The role of credit in a money economy, classification of credit, principles underlying the economic use of credit and the role of the government in the field of credit will also be covered. (S)

**AGEC 650. Human Resource Development** **Credit 3(3-0)**

This course provides an analysis of human resources in relation to changing agricultural production technology in rural areas. Prerequisite: Consent of instructor. (DEMAND)

**AGEC 675. Computer Applications in Agricultural Economics** **Credit 3(3-0)**

This course is designed to provide students with the tools to utilize computers for agricultural decision-making. Emphasis will be placed on utilizing existing software packages for microcomputers and mainframe computers to make financial, economic and quantitative analyses of farm and agribusiness-related problems. Prerequisite: AGECE 330 or ECON 300. (S)

## **COURSE DESCRIPTIONS IN RURAL SOCIOLOGY**

**AGEC 300. Principles of Rural Sociology** **Credit 3(3-0)**

Social systems, cultural patterns, and institutional arrangements of people in rural environments will be examined. An interpretation of the structure, functioning and change in rural social systems will also be covered. (F)

AGEC 301. Rural Social Problems

Credit 3(3-0)

This course focuses on the problems and solutions of population dynamics, education, religion, health, land tenure, parity income, farm labor, mechanization, housing, poverty, and rural development as they affect the growth of the rural community. (DEMAND)

AGEC 303. Rural Family

Credit 3(3-0)

The course examines the institutional nature of the rural family, its role in the community, including its relationship to educational, religious, welfare and other community organizations. (DEMAND)

AGEC 505. Rural Standards of Living

Credit 3(3-0)

This course examines the consumption behavior in the main community groups of our rural society as well as the poverty threshold and the plight of the rural poor. (DEMAND)

AGEC 506. Special Problems in Rural Sociology

Credit (2 to 4 hrs)

This course includes work on problems in the rural society under the guidance of a faculty member. (DEMAND)

REQUIRED MAJOR COURSES FOR AGRICULTURAL EDUCATION

(Secondary Education)

AGEC 130	AGED 503	AGED 403
AGED 400	AGED 300 or AGED 609	AGED 502
AGED 402	AGED 101	AGED 607
AGED 501	AGED 401	

\*Students in the secondary education track must meet all requirements for admission to the teacher education program.

\*\*A grade of "C" must be earned in all of the above requirements or an average of "C" must be earned in all courses for the agricultural professional service track.

CURRICULUM GUIDE FOR AGRICULTURAL EDUCATION

(Secondary Education)

FRESHMAN YEAR

First Semester	Credit	Second Semester	Credit
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
Social Science Elective <sup>1</sup>	3	Social Science Elective <sup>1</sup>	3
BIOL 100	4	CHEM 104 & 114	4
AGEC 130	1	AGED 101	1
PHED 200	<u>2</u>	Second Major Concentration	<u>3</u>
	16		17

SOPHOMORE YEAR

First Semester	Credit	Second Semester	Credit
ENGL 200	3	ENGL 201	3
SPCH 250	3	CUIN 301	3
PSYC 320	3	ANSC 211	3
NARS 110	3	HORT 334	3
AGEN 114	3	Second Major Concentration	<u>3</u>
CUIN 102	<u>2</u>		15
	17		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGED 400	3	AGED 402	3
AGED 401	3	AGED 403	3
SLSC 338	4	CUIN 400	3
Second Major Concentration	3	Second Major Concentration	3
Second Major Concentration	3	Second Major Concentration	3
CUIN 624	<u>3</u>	CUIN 436	<u>3</u>
	18		18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGED 501	3	AGED 502	<u>12</u>
AGEC 300 or AGED 609	3		12
AGED 607	3		
SPED 350	3		
AGED 503	<u>3</u>		
	15		

Total Credit Hours: 128

<sup>1</sup> HIST 100 History of World Civilizations I or HIST 215 History of Africa to 1800

## REQUIRED MAJOR COURSES FOR AGRICULTURAL EDUCATION

### (Agricultural Professional Service)

AGEC 130	AGED 607	AGED 403
AGED 400	AGEC 300 or AGED 609	AGED 504
AGED 402	AGED 101	AGED 608
AGED 503	AGED 401	

\*Students in the secondary education track must meet all requirements for admission to the teacher education program.

\*\*A grade of "C" must be earned in all of the above requirements or an average of "C" must be earned in all courses for the agricultural professional service track.

## CURRICULUM GUIDE FOR AGRICULTURAL EDUCATION

### (Agricultural Professional Service)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
Social Science Elective <sup>1</sup>	3	Social Science Elective <sup>1</sup>	3
BIOL 100	4	CHEM 104 & 114	4
AGEC 130	1	AGED 101	1
PHED 200	<u>2</u>	Second Major Concentration	<u>3</u>
	16		17

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
POLI 150	3	SPCH 250	3
ENGL 200	3	ENGL 201	3
PSYC 320	3	ENGL 331	3
NARS 110	3	ANSC 211	3
AGEN 114	3	SOCI 100	3
Second Major Concentration	<u>3</u>	Second Major Concentration	<u>3</u>
	18		18



## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGED 400	3	AGED 402	3
AGED 401	3	AGED 403	3
SLSC 338	4	MATH 224	3
AGED 607	3	Second Major Concentration	3
Second Major Concentration	<u>3</u>	Second Major Concentration	<u>4</u>
	16		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HORT 334	3	AGED 504	6
AGED 501	3	Second Major Concentration	3
AGED 608	3	Second Major Concentration	<u>3</u>
AGEC 300 or AGED 609	3		12
AGED 503	<u>3</u>		
	15		

Total Credit Hours: 128

<sup>1</sup> HIST 100 History of World Civilizations I or HIST 215 History of Africa to 1800

## SECOND MAJOR CONCENTRATIONS

**AGRICULTURAL SCIENCE:** BIOL 100, 160, 220, 240, 260, and SLSC 338 (*Total Hours: 24*)

**ANIMAL SCIENCE:** ANSI 211, 212, 214, 411, 416, 312, 619, and BIOL 100 (*Total Hours: 25*)

**AGRICULTURAL BUSINESS AND MARKETING:** AGECE 240, 300, 330, 432, 434, 436, 599, and MATH 101 (*Total Hours: 24*)

**AGRICULTURAL COMMUNICATIONS:** COMM 220, 202, 404, 405, ENGL 100, 101, 331, and CUIN 624 (*Total Hours: 24*)

**NATURAL AND ENVIRONMENTAL SCIENCES:** EASC 201, 330, 625, 622, 699, NARS 110, 618, and AGED 607 (*Total Hours: 24*)

**PLANT AND SOIL SCIENCE:** BIOL 100, 240, SLSC 338, HORT 334, NARS 110, 618, and HORT 608 (*Total Hours: 24*)

**RURAL SOCIOLOGY:** AGECE 300, 301, 303, 505, 506, SOCI 100, 203, and PSYC 320 (*Total Hours: 24*)

## COURSE DESCRIPTIONS IN AGRICULTURAL EDUCATION

### Undergraduate

**AGED 101. Introduction to Agriscience Education** **Credit 1(1-0)**

This course includes a study of the broad base of modern agriculture with emphasis on current trends and opportunities. (F)

**AGED 300. Introduction to International Agriculture** **Credit 3(3-0)**

This is an introductory course to acquaint students with international agriculture and agricultural developments, including the relationship between agricultural systems in various countries and the impact of world agriculture on the U.S. and other countries. It provides introduction for students who plan careers in agricultural education in the U.S. or other countries. (DEMAND)

**AGED 400. Instructional Technology In Agriscience Education** **Credit 3(3-0)**

This course will cover the utilization of multimedia instructional tools, and how their applications can enhance the learning process. (F;S)

**AGED 401. Leadership Theory and Youth Program Management** **Credit 3(3-0)**

Theories in leadership development will be analyzed, and the organization of youth groups in secondary schools, cooperative extension, and other community groups will be examined. (F)

**AGED 402. History and Philosophy of Agriscience Education in the American Public School System** **Credit 3(3-0)**

The historical and philosophical structure of agriculture in the American public school system will be analyzed. (S)

**AGED 403. Adult Education in Agriscience and Extension Education** **Credit 3(3-0)**

Principles and techniques for organizing educational programs for adults involved in the food and fiber system. (F;S)

**AGED 501. Materials and Methods of Teaching Agricultural Education and Extension** **Credit 3(3-0)**

This course covers the principles of teaching as applied to agriculture in secondary schools and cooperative extension. Preparing and using lesson plans and organizing teaching aids to meet educational and community needs will also be a part of this course. Prerequisites: AGED 400, 401, and 402; PSYC 320. (F)

**AGED 502. Student-Teaching** **Credit 12(12-0)**

Students will be required to spend a minimum of twelve weeks in an approved teaching center doing observation and directed student teaching. Prerequisite: AGED 501. (F;S)

**AGED 503. Program Planning and Evaluation** **Credit 3(3-0)**

This course covers the process of program building and evaluation in agricultural and extension education. Prerequisites: AGED 501 and 502. (F;S)

**AGED 504. Internship in Extension, Government, or Agribusiness** **Credit 6(6-0)**

Students will be required to spend a minimum of six weeks in an approved extension program, governmental agency, or agribusiness firm doing observation and directed professional work. (F;S; SS)

**AGED 520. Special Problems in Agricultural Education and Extension** **Credit 1-6(1-6)**

Special work in problems dealing with Agricultural Education and Extension will be examined. (Enrollment by permission of department)

**Advanced Undergraduate and Graduate**

**AGED 600. Youth Organization and Program Management** **Credit 3(3-0)**

Principles, theories, and practices involved in organizing, conducting, supervising and managing youth organizations and programs will be examined. Emphasis will be on the analysis of youth organization and programs in vocational and extension education. (SS)

**AGED 601. Adult Education in Vocational and Extension Education** **Credit 3(3-0)**

This course is a study of the principles and problems of organizing and conducting programs for adults. Emphasis is given to the principles of conducting organized instruction in agricultural education, extension and related industries. (F)

**AGED 607. Environmental Education** **Credit 3(3-0)**

This course examines the principles and practices of understanding the environment and the interrelated complexities of the environment. The course will include a study of agricultural occupations related to the environment and materials that need to be developed for use by high school teachers of agriculture and other professional workers. (S)

**AGED 608. Agricultural Extension Organization and Methods** **Credit 3(3-0)**

The principles, objectives, organization, program development and methods in cooperative extension will be examined. (F)

**AGED 609. Community Analysis and Rural Life** **Credit 3(3-0)**

This course is the study of the educational processes, structure and function of rural society, and the role which diverse organizations, agencies, and institutions play in the education and adjustment of rural people to the demands of modern society. (SS) (DEMAND)

**AGED 610. International Education in Agriculture** **Credit 3(3-0)**

This course examines formal and informal agricultural education systems and related situations and processes which influence agricultural development in developing countries. Included are the nature and scope of the world food situation, the rationale and extent of U.S. involvement in development efforts, and the agencies and organizations involved and procedures they use. Educational programs that will enable families to improve their quality of life will be emphasized. (DEMAND)

**AGed 611. Special Problems In Agricultural Education And Extension** **Credit 1-6 (1-6 repeatable)**

Special work in problems dealing with Agricultural Education and Extension will be examined. Students should be at the graduate level or be working on their lateral or provisional license in agricultural education. (Enrollment by permission of department.)

**AGED-612. Field Studies In Agricultural Education** **Credit 1-6(1-6 repeatable)**

Field Studies involved in Agricultural and Extension Education. (Enrollment by permission of department.)

**DIRECTORY OF FACULTY**

**Kofi Adu-Nyako** ..... **Adjunct Associate Professor**  
B.S., University of Science and Technology; M.S., Cornell University; Ph.D., University of Florida

**Antoine J. Alston** ..... **Assistant Professor**  
B.S., M.S., North Carolina A&T State University; Ph.D., Iowa State University

**Marcus Comer.** ..... **Assistant Professor**  
B.S., M.S., Tennessee State University, Ph.D., University of Missouri

**Godfrey C. Ejimakor** ..... **Adjunct Associate Professor**  
B.S., North Carolina State University; M.S., North Carolina A&T State University; Ph.D., Texas Tech

**Benjamin Gray** ..... **Adjunct Assistant Professor**  
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**Daniel M. Lyons** ..... **Cooperative Extension Faculty, Administration**  
B.S., M.S., North Carolina A&T State University; Ed.D., Virginia Polytechnic Institute and State University

**Donald R. McDowell.** ..... **Professor/Associate Dean for Academic Programs**  
B.S., Southern University A&M; M.S., Ph.D., University of Illinois

**John O’Sullivan** ..... **Cooperative Extension Faculty**  
B.A., Stanford University; M.S., Auburn University; Ph.D., University of California at Los Angeles

**John P. Owens** ..... **Adjunct Instructor**  
B.S. Appalachian State University, M.S. North Carolina A&T State University

**Richard D. Robbins** ..... **Professor**  
 B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University

**Terrence Thomas** ..... **Associate Professor**  
 B.S., University of West Indies; M.S., University of Wisconsin; Ph.D., Louisiana State University

**Alton Thompson** ..... **Professor and Dean**  
 B.S., North Carolina Central University; M.S., Ph.D., Ohio State University

**Anthony K. Yeboah** ..... **Professor and Interim Chairperson**  
 B.S., University of Science and Technology; M.S., Ph.D., Iowa State University

#### **FACULTY EMERITI**

**Sidney H. Evans** ..... **Professor Emeritus**  
 B.S., Virginia State University; M.A., Ph.D., Ohio State University



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## **Department of Animal Sciences**

[www.ag.ncat.edu/academics/anisci/index.html](http://www.ag.ncat.edu/academics/anisci/index.html)

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**Charles T. Kadzere, Chairperson**

### **OBJECTIVES**

Baccalaureate degree programs in the Department of Animal Sciences prepare students for careers in animal sciences, biotechnology, biomedical research, pharmaceutical, and related industries, for graduate school, and for entry into human and veterinary medicine professional schools. The Department provides service to the people of North Carolina, the United States, and the world.

### **DEGREE PROGRAMS**

Animal Science – Bachelor of Science

Animal Science (Animal Industry) – Bachelor of Science

Laboratory Animal Science – Bachelor of Science

Animal Health Science – Master of Science\*

*\*See the Graduate School Bulletin*

Interdisciplinary certificate programs in Biotechnology (18 credit hours) and Waste Management (18 to 20 credit hours) are offered to students enrolled in Bachelor of Science degree programs in the department.

### **ADMISSION AND DEGREE PROGRAMS REQUIREMENTS**

Admission of students to the undergraduate degree programs in the Department of Animal Sciences is based upon the general admission requirements of the University. The B. S. degree in Animal Science requires a minimum of 126 semester hours, and the B.S. with a concentration in Animal Science (Animal Industry) requires a minimum of 124 semester hours. The B.S. degree in Laboratory Animal Science requires a minimum of 125 semester hours. It is a university requirement that students complete three hours of African /African American Studies, three hours of Global Studies, and six hours of humanities. During the summer vacations, internships are strongly recommended.

### **CAREER OPPORTUNITIES**

Graduates from the department have numerous and varied career opportunities that are related to the area of a student's specialization and interest. Careers include but are not limited to: sales positions in animal science and related industries; feed, food, and animal health professionals; technical professionals in biotechnology, biomedical and pharmaceutical industries, managerial, administrative, and public relations positions; product managers in swine, beef, dairy, poultry, sheep, and goat production; careers in veterinary and human medicine; consultants, representatives and managers with animal breeding and livestock marketing organizations and stockyard companies; technicians with zoos, kennels and similar facilities, breed companies and production animal agriculture; teachers and researchers in education; extension specialists and livestock insurance representatives; federal agency officials; managers with commercial feedlots, and laboratory technicians; managers, researchers, and technicians with livestock processing plants; and journalists with radio and television stations.

## REQUIRED MAJOR COURSES FOR ANIMAL SCIENCE

LASC 161	ANSC 211	ANSC 416
LASC 162	ANSC 212	ANSC 451
LASC 459	ANSC 214	ANSC 611
LASC 460	ANSC 411	ANSC 665
LASC 461		

## CURRICULUM GUIDE FOR ANIMAL SCIENCE

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
LASC 162	3	ANSC 211	3
LASC 161	1	BIOL 101 or 240	4
MATH 111	4	MATH 112	4
CHEM 106, 116	4	CHEM 107, 117	4
	15		18

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ENGL 201	3
CHEM 221, 223	5	HIST Elective	3
LASC 261	3	CHEM 222, 224	5
PHED 200	2	ANSC 411	3
ANSC 214	3	ANSC 212	3
	16		17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 225, 235	4	PHYS 226, 236	4
BIOL 160	4	BIOL 220 or 221	4
MATH 224	3	ANSC 451	3
LASC 459	4	ANSC 416	4
CHEM 251, 252	3	HIST Elective	3
	18		18

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
LASC 460	3	LASC 461	3
ANSC 611	6	BIOL 671	3
AGEC 330	3	ANSC 665	3
ANSC 321	3	Elective	3
	12		12

Total Credit Hours: 126

*Elective courses: ANSC 217, 312, 413, 415, 555, 614, 619, 624, 641; LASC 363, 463, 569.*

## REQUIRED MAJOR COURSES FOR ANIMAL SCIENCE (ANIMAL INDUSTRY)

LASC 161	ANSC 214	ANSC 416
LASC 162	ANSC 217	ANSC 421
LASC 363 or 463	ANSC 312	ANSC 451
ANSC 211	ANSC 411	ANSC 555
ANSC 212	ANSC 413	

*A GPA of at least 2.00 or better has to be maintained in the required courses.*

# CURRICULUM GUIDE FOR ANIMAL SCIENCE

## (Animal Industry)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
LASC 162	3	MATH 102	3
BIOL 101 or 240	4	ANSC 211	3
MATH 101	3	SPCH 250	3
HIST Elective	3	HIST Elective	3
LASC 161	<u>1</u>	PHED 200	<u>2</u>
	17		17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL Elective	3	ENGL Elective	3
CHEM 106, 116	4	CHEM 107, 117	4
ACCT 203	2	ANSC 217	3
ANSC 214	3	BIOL 220 or 221	4
AGEC 240	<u>3</u>	ANSC 212	<u>3</u>
	15		17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 201	3	AGEC 434	3
ANSC 312	3	ANSC 413	2
ANSC 421	3	ANSC 416	3
AGEC 330	3	ANSC 451	3
ANSC 411	<u>3</u>	ANSC 555	<u>4</u>
	15		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEC 446	3	LASC 465	3
BUAD 522	3	AGEC 530	3
LASC 363 or 463	3	AGEC 405	3
ANSC 536	2	LASC 466	3
Professional Electives	<u>3</u>	ANSC 541	<u>2</u>
	14		14

Total Credit Hours: 124

*Animal Industry: ANSC 312, 411, 415, 416, 555, 541; LASC 261, 569.*

### REQUIRED MAJOR COURSES FOR LABORATORY ANIMAL SCIENCE

LASC 161	LASC 460	LASC 653
LASC 162	LASC 461	ANSC 211
LASC 261	LASC 462	ANSC 212
LASC 365	LASC 569	ANSC 611
LASC 459	LASC 636	

*A grade of "C" must be earned in all of the above requirements or an average of "C" must be earned in all courses.*

# CURRICULUM GUIDE FOR LABORATORY ANIMAL SCIENCE

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 106,116	4	CHEM 107,117	4
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
PHED Elective	1	PHED Elective	1
LASC 161	1	ANSC 211	<u>3</u>
LASC 162	<u>3</u>		15
	16		

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 160 <sup>1</sup>	4	BIOL 240	4
CHEM 221, 223	3,2	CHEM 222, 224	3,2
Humanities Elective <sup>2</sup>	3	Humanities Elective <sup>2</sup>	3
LASC 261 <sup>3</sup>	3	Social Science Elective <sup>4</sup>	3
SPCH 250	<u>3</u>	MATH 224	<u>3</u>
	18		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ANSC 214	3	BIOL 221	4
LASC 459	4	LASC 460 <sup>5</sup>	3
LASC 365	4	Social Science Elective <sup>4</sup>	3
PHYS 225, 235	3,1	PHYS 226, 236	3,1
CHEM 251, 252	<u>2,1</u>	ANSC 212	<u>3</u>
	18		17

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD Elective <sup>8</sup>	3	LASC 461	3
LASC 462	3	LASC 636	3
ANSC 611	3	LASC 653	<u>4</u>
LASC 569	1		10
Professional Elective <sup>6,7</sup>	<u>3</u>		
	13		

Total Credit Hours: 125

<sup>1</sup> Recommended Courses: BIOL 101, 160, 240.

<sup>2</sup> Recommended Courses: ENGL 200, 201, 203, 333; MUSI 216, 220, 221; and other courses from Art, Music and/or Literature; Foreign Languages including FOLA 417.

<sup>3</sup> Offered Fall and Spring Semesters.

<sup>4</sup> Electives: HIST 100, 101, 201, 202, 215, 216, 310, 311; POLI 200, 220; SOCI 100 and 200, 314.

<sup>5</sup> Offered Fall and Spring Semesters.

<sup>6</sup> LASC 363, 463, 564, 660 – (May be used to satisfy direct major GPA requirements).

<sup>7</sup> ANSC 312, 421, 451, 665.

<sup>8</sup> BUAD 220, 341, 422, 522.



## HUMAN AND VETERINARY MEDICAL PREPARATION

### (Pre-Veterinary)

Preparation for admission to Human and Veterinary Medicine Schools is offered through the degree programs in Laboratory Animal Science or Animal Sciences. These programs have become the first choice programs for students aspiring to enter medical professional schools.

### COURSE DESCRIPTIONS IN ANIMAL SCIENCE

#### **ANSC 211. Animal and Laboratory Animal Sciences** **Credit 3(2-2)**

Basic genetics, physiology, nutrition, animal products, processing, disease control, euthanasia, anesthesiology, and pharmacology. Production practices, management, and health of livestock and animals used in biomedical research. Prerequisite: LASC 162. (F;S)

#### **ANSC 212. Feeds and Feeding** **Credit 3(3-0)**

Composition and nutrient content of feeds, basic principles of feeding, comparative digestive systems, basic principles of nutrition for ruminant and monogastric animals. Prerequisites: LASC 162 and ANSC 211. (S)

#### **ANSC 214. Agricultural Genetics** **Credit 3(2-2)**

Basic principles of heredity in relation to animal and plant improvement. Laboratory in cytology and the genetic basis of inheritance. Prerequisite: BIOL 101, 240, or 160. (F;S)

#### **ANSC 217. Anatomy and Physiology of Farm Animals** **Credit 3(2-2)**

Structures and functions of the body systems and organs of domestic animals. Pre-requisites: ANSC 211, BIOL 160. (S)

#### **ANSC 312. Meat and Meat Products** **Credit 3(2-2)**

Meats from the consumer, processor, and producer standpoints. Meat as a food; inspection, grading, processing, preservation, and identification. (F)

#### **ANSC 411. Livestock Production** **Credit 3(2-2)**

Selection, breeding, feeding, management of beef cattle and sheep. Prerequisite: ANSC 212. (F)

#### **ANSC 413. Sanitation and Diseases of Farm Animals** **Credit 2(2-0)**

Sanitation and the common diseases of livestock with reference to causes, prevention and treatment as well as their relation to the environment. (S)

#### **ANSC 415. Horse Production** **Credit 3(2-2)**

A survey of the light horse industry in the U.S. Horse Breeds and registry associations. Breeding, care, and management in the light Horse. Comparative judging of breed groups' preventative procedures; disease control. (F)

#### **ANSC 416. Swine Production** **Credit 3(2-2)**

Breeding, nutrition, production, and management in modern swine enterprises. Marketing and economic aspects of swine production. Swine production and the environment. Prerequisite: ANSC 211. (S)

#### **ANSC 611. Principles of Animal Nutrition** **Credit 3(3-0)**

Fundamental of modern animal nutrition; classification of nutrients, nutrient metabolism; nutrient partitioning in production. (S)

#### **ANSC 614. Animal Breeding** **Credit 3(3-0)**

Application of genetic and breeding principles to livestock production and improvement. Phenotypic and genotypic effects of selection methods; mating systems. Prerequisites: ANSC 211 and 214. (S)

**ANSC 615. Selection of Meat and Meat Products** **Credit 3(2-2)**  
Identification, grading and cutting of meats. (SS)

**ANSC 619. Special Problems in Livestock Management** **Credit 3(3-0)**  
Problems in feeding, breeding and management in beef cattle, sheep and swine production. Prerequisite: Senior standing. (F)

**ANSC 624. Physiology of Reproduction in Vertebrate Species** **Credit 3(2-2)**  
Mechanisms of reproductive processes with special emphasis on their interaction with the disciplines of nutrition, immunology and biochemistry. Prerequisite: ANSC 461, 623, or permission of instructor. (F)

**ANSC 637. Environmental Toxicology** **Credit 3(3-0)**  
Basic principles of environmental toxicology; regulatory perspectives; spills, anthropogenic pollution problems; ecological and human risk assessments; overview of classes of toxic agents, routes of exposure, target animals (aquatic, terrestrial, and mammalian species), and toxicological testing. Prerequisites: BIOL 101, CHEM 106 or 107, and CHEM 251. (S)

**ANSC 665. Techniques in Biotechnology** **Credit 3(2-2)**  
Basic principles and laboratory experiences in biotechnology. Concepts of DNA structure, function, related applications in biotechnology. Methods: isolating DNA and RNA; genomic DNA and plasmid DNA analysis, gel electrophoresis, Southern hybridization, gene probes, and more. Prerequisite: CHEM 251, ANSC 214, BIOL 466, or permission of instructor. (F;S)

**ANSC 713. Advanced Livestock Production** **Credit 3(2-2)**  
Research relating to various phases of livestock production; the livestock enterprise on the whole farm system. Overall economic performance. (F)

## **DAIRY SCIENCE**

**ANSC 421. Dairy Cattle Production** **Credit 3(2-2)**  
Lactation, management and nutrition for efficient milk production. Dairy cattle breeding and selection. Care of dairy equipment and dairy cattle records. Prerequisite: ANSC 212. (F)

## **COURSE DESCRIPTIONS IN POULTRY SCIENCE**

**ANSC 354. Fundamentals of Poultry Breeding** **Credit 4(3-2)**  
Breeding, selection, and improvement of poultry. Prerequisites: ANSC 214 and 451. (S)

**ANSC 451. Poultry Production** **Credit 3(2-2)**  
Principles and practices of poultry production. Prerequisite: ANSC 211. (F)

**ANSC 555. Advanced Commercial Poultry Management** **Credit 4(3-2)**  
Management of poultry farm and hatchery operation will be emphasized. Prerequisite: ANSC 351. (F)

**ANSC 641. Disease Management of Livestock and Poultry** **Credit 3(2-2)**  
Prevention and control of diseases in livestock species and Poultry; Micro and macroenvironments that result in disease. Prerequisite: ANSC 451. (S)

## **LABORATORY ANIMAL SCIENCE**

**LASC 161. Orientation I** **Credit 1(1-0)**  
Orientation to college academic life with consideration for program demands, learning techniques and resources. (F)

**LASC 162. Introduction to Animal and Laboratory Animal Sciences** **Credit 3(3-0)**  
Ethical considerations, basic sciences, history of use, laws, and guidelines in using livestock and laboratory animals.

- LASC 261. Medical Terminology** **Credit 3(3-0)**  
Introduction to medical terminology; vocabulary building using Latin and Greek terms as it relates to basic anatomy, physiology, and pathology. (F;S)
- LASC 363. Internship I** **Credit 1-6(0-2 to 12)**  
Preparation and field experiences with activities in Laboratory Animal Sciences. Prerequisites: Junior standing and special departmental permission. (F;S;SS)
- LASC 365. Biology, Diseases and Care of Laboratory Animal** **Credit 4(3-3)**  
The biology, diseases and care of laboratory animals; Behavior of common laboratory animals; handling, restraint; necropsy and diagnostic procedures: anesthesia, aseptic surgical procedures. (F)
- LASC 459. Integrated Anatomy** **Credit 4(3-3)**  
The origin, development, and structure of bio-systems in laboratory animals, food animals and companion animals will be studied. Prerequisite: LASC 261. (F)
- LASC 460. Microscopic Anatomy** **Credit 3(2-3)**  
Microscopic studies of cells and tissues of laboratory, food, and companion animals. Prerequisite: LASC 459. (F;S)
- LASC 461. Physiology of Domestic Animals** **Credit 3(2-3)**  
Function of bio-systems in laboratory animals farm animals, and companion animals. Prerequisite: LASC 459. (S)
- LASC 462. Principles of Medical Sciences** **Credit 3(3-0)**  
Basic concepts of diseases and the biological reactions to disease within the living body. Basic concepts on the living body; cell injury, inflammatory reactions; circulatory disturbances; immune disorders; growth disturbances; and the nature and cause of disease. (F)
- LASC 463. Internship II** **Credit 3-6(0-6 to 12)**  
Field experiences in veterinary medical activities. Prerequisites: LASC 363 and special departmental permission. (F;S;SS)
- LASC 564. Introduction to Research** **Credit 3(2-3)**  
Biomedical research techniques including fundamental laboratory investigations, precepts of the scientific method and experimental design; application of scientific instrumentation. Prerequisite: Senior standing. (S)
- LASC 569. Seminar in Laboratory Animal Science** **Credit 1(1-0)**  
Discussion of current topics in laboratory animal science or histotechnology. (F)
- LASC 636. Principles of Toxicology** **Credit 3(2-3)**  
General principles involved in absorption, distribution, and excretion of toxicants, biotransformation, adverse effects, and factors that modify their effects. Toxic effects on specific target organs. (S)
- LASC 653. Laboratory Animal Management and Clinical Techniques** **Credit 4(2-6)**  
Principles, theories and current concepts of laboratory animal science. Government regulations, ethical considerations, animal facility management and animal health surveillance. Prerequisite: Permission of instructor. (S)
- LASC 660. Special Techniques in Specimen Preparation, Immunological Techniques, Electron Microscopy, Radiology or Histotechnology** **Credit 3(1-6)**  
Special expertise in either the preparation of animal models for classroom, museum, and special display, the theoretical and practical aspects of immunological techniques, electron and light microscopy, radiology, tissue culture or histochemistry. Prerequisite: Senior standing or special departmental permission. (F;S;SS)

## DIRECTORY OF FACULTY

- John Allen** ..... **Adjunct Assistant Professor**  
 B.S., University of Georgia; M.S., Ph.D., University of North Carolina at Chapel Hill
- Doris Fultz** ..... **Associate Professor**  
 B.S. Virginia Commonwealth University; B.S., DVM, Tuskegee Institute
- Tracy L. Hanner** ..... **Adjunct Assistant Professor**  
 B.S., North Carolina Central University; DVM, North Carolina State University
- Charles Kadzere** ..... **Associate Professor and Chairperson**  
 Dip. Agric., Chibero College; B.S., M.S., Ph.D., George-August University; M.S., University of London
- David Libby** ..... **Associate Professor**  
 B.S., Ph.D., University of Maine
- M. Ray McKinnie** ..... **Cooperative Extension Faculty/Associate Dean**  
**Cooperative Extension**  
 B.S., North Carolina A&T State University; M.S., Ohio State University, Ph.D., N.C. State University, Agricultural Extension Faculty
- Charles Talbott** ..... **Adjunct Assistant Professor**  
 B.S., Colorado State University; M.S., Virginia Polytechnic Institute and State University; Ph.D. North Carolina State University
- Willie Willis** ..... **Professor**  
 B.S., Fort Valley State College; M.S., Ph.D., Colorado State University
- Mulumbet Worku** ..... **Assistant Professor**  
 B.S., Addis Ababa University, Alemaya College of Agriculture; M.S., Ph.D., University of Maryland, College Park



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## **Department of Human Environment and Family Sciences**

<http://www.ag.ncat.edu/academics/hefs/index.html>

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**Gladys G. Shelton, Chairperson**

### **OBJECTIVES**

The objectives of the Human Environment and Family Sciences Department are as follows:

1. To develop satisfying personal, group and family relationships as a basis for active participation in a democratic society;
2. To understand the enrichment of home and family living through the appreciation and use of art and advances in science and technology;
3. To develop an understanding and appreciation of varying cultural backgrounds; and
4. To prepare the individual for gainful employment in one of the major areas of the profession.

### **DEGREES OFFERED**

Child Development and Family Studies (Non-Licensure) – Bachelor of Science

Child Development Early Education & Family Studies (B-K) - (Teacher Licensure) – Bachelor of Science

Family and Consumer Sciences Education – Bachelor of Science

Family and Consumer Sciences - (Fashion Merchandising and Design) – Bachelor of Science

Food and Nutritional Sciences - (Food Science) – Bachelor of Science

Food and Nutritional Sciences - (Dietetics) – Bachelor of Science

Food and Nutritional Sciences – Master of Science\*

*\* See the Graduate School Bulletin*

Interdisciplinary certificate programs are offered to students enrolled in Bachelor of Science programs at the University. Areas of specialization include Biotechnology (18 credit hours) and Waste Management (18 to 20 credits hours).

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in the Human Environment and Family Sciences Department is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

Majors in Human Environment and Family Sciences and all of the concentrations must complete the required programs of course work. A minimum grade of “C” is required in all core and program area courses for graduation.

### **ACCREDITATION**

The Human Environment and Family Sciences Department programs are nationally accredited by the American Association of Family and Consumer Sciences.

The Family and Consumer Sciences Education and the Child Development, Early Education and Family Studies Birth-Kindergarten (teacher licensure) programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction under the University-wide accreditation and approval of teacher education programs.

The Didactic Program is approved by the Commission on Accreditation/Approval, for Dietetics Education of The American Dietetic Association, a specialized body recognized by the Commission on Recognition of Post secondary Accreditation and the United States Department of Education.

### **TEACHER EDUCATION PROGRAM**

The Child Development Early Education and Family Studies: Birth-Kindergarten (Licensure) Program has the following goals and educational outcomes:

#### **Goals:**

- To provide a course of study that prepares majors for appropriate birth-kindergarten teaching practices, and teacher-related careers.
- To provide a course of study that encourages professional knowledge, skills, and dispositions as a foundation for professional growth and development while utilizing interdisciplinary and multidisciplinary training from diverse disciplines (elementary education, special education, speech pathology, physical education (public health), psychology, sociology, and social work.
- To provide experiences and opportunities that promote professional development and affiliation.
- To coordinate and supervise clinical experiences and research activities in a range of settings that demonstrate the blend of theory and practice with young children and families.

#### **Educational Outcomes:**

- Identify a personal philosophy and a career purpose that is related to the profession and embraces the diverse characteristics of the environment.
- Demonstrate appropriate and professional knowledge, skills, and dispositions as an early childhood educator.
- Strengthen the skills needed to effectively communicate in the professional realm with administrators, co-workers, students, parents and others.
- Discover and consider benefits of graduate work within the field.
- Commit to life-long learning and self-improvement through professional development opportunities related to, but not limited to technology, and assessment.
- Identify and understand various diverse populations of young children and their families.

The Family and Consumer Sciences Education Program has the following Goals and Educational Outcomes:

#### **Goals:**

- To develop student competencies necessary for integrating the philosophy of family and consumer sciences and education, knowledge of contemporary society, and professional

information needed to help individuals and families achieve and maintain a satisfying life.

- To develop critical thinking skills and communication techniques necessary for transmitting knowledge, skills and attitudes to individuals and families.
- To develop competencies needed for employment and graduate study in family and consumer sciences and related areas.

### **Educational Outcomes:**

- Identify the philosophy and role of family and consumer sciences in providing a satisfying quality of life.
- Describe the impact of cultural diversity on the economic, social, psychological and emotional well being of individuals and families in contemporary society.
- Evaluate professional subject matter content and trends meeting current family and societal needs. Incorporate educational and societal trends in developing professional subject matter content areas.
- To strengthen, skills in critical thinking, coping and communication, which will facilitate effective working relationships with persons, from diverse socio-economic levels and backgrounds.
- Demonstrate personal characteristics, attitudes, skills and knowledge needed for employment as a professional family and consumer scientist.
- Investigate opportunities to pursue research and/or graduate study.

### **CAREER OPPORTUNITIES**

The programs in the Human Environment and Family Sciences Department prepare students for, but do not limit them to the following suggested careers as public school/child-care personnel, community/early childhood center providers, family specialists, birth-kindergarten teachers, child-care directors, sport and corporate wellness nutritionists, private practice, nutrition-related business and industries, nutritionists in hospitals and other health care facilities, researchers in universities and medical centers, apparel design, visual merchandisers, retail buyers, manager, sketch artists, product development specialists, global sourcing managers, food production management specialist, quality assurance specialists, technical sales, food inspection specialists, and researchers for federal, state, and local government.

### **REQUIRED MAJOR COURSES FOR FAMILY AND CONSUMER SCIENCES**

#### **(Fashion Merchandising and Design)**

HEFS 101	HEFS 380	HEFS 485
HEFS 181	HEFS 382	HEFS 487
HEFS 183	HEFS 384	HEFS 489
HEFS 280	HEFS 480	HEFS 514
HEFS 281	HEFS 482	HEFS 612
HEFS 310		

*A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.*

# CURRICULUM GUIDE FOR FAMILY AND CONSUMER SCIENCES

## (Fashion Merchandising and Design)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
HEFS 101 <sup>1</sup>	1	HEFS 183	3
Social Science Elective <sup>2</sup>	3	Social Science Elective <sup>2</sup>	3
HEFS 181	<u>3</u>	ART 100	<u>3</u>
	14		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENG <sup>2</sup>	3	ENG <sup>2</sup>	3
CHEM 100	3	PHYS 110	2
CHEM 110	1	PHYS 111	1
SOCI 200 or 300	3	SPCH 250	3
HEFS 281	3	PHED 200	2
ART 226	<u>3</u>	MATH 224 or SOCI 203	3
	16	HEFS 280	<u>3</u>
			17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 334	3	HEFS 380	3
HEFS 483	3	HEFS 382	3
BUAD 422	3	HEFS 483	3
BUAD 430	3	PSYC 320	3
ECON 200 or 201	3	Elective	<u>3</u>
HEFS 310 <sup>1</sup>	<u>3</u>		15
	18		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 514 <sup>1</sup>	3	HEFS 482	3
BUAD 425	3	HEFS 487	3
HEFS 489	3	HEFS 485	3
HEFS 612 <sup>1</sup>	3	HEFS 480	3
Elective	<u>3</u>	BUAD 537	3
	15	Elective	<u>2</u>
			17

Total Credit Hours: 128

<sup>1</sup> HEFS Core Courses

<sup>2</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African-American studies and a three-hour course in Global Studies.



## REQUIRED MAJOR COURSES FOR CHILD DEVELOPMENT

### (Non-Teacher Licensure)

HEFS 101	HEFS 403	HEFS 600
HEFS 310	HEFS 414	HEFS 619
HEFS 311	HEFS 419	HEFS 632
HEFS 337	HEFS 430	HEFS 634
HEFS 400	HEFS 514	HEFS 639
HEFS 401		

*A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.*

## CURRICULUM GUIDE FOR CHILD DEVELOPMENT AND FAMILY STUDIES

### (Non-Licensure)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HEFS 101 <sup>1</sup>	1	CHEM 100	3
Social Science Elective <sup>2</sup>	3	Social Science Elective <sup>2</sup>	3
BIOL 100	4	CHEM 110	1
PHED 200	<u>2</u>	SPCH 250	<u>3</u>
	16		16

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ENGL 201	3
BUED 334	3	SPED 350	3
PSYC 320	3	HEFS 311	3
HEFS 310 <sup>1</sup>	3	HEFS 401	3
HEFS 418	3	HEFS 403	3
Cognate Area Elective*	<u>3</u>	Cognate Area Elective*	<u>3</u>
	18		18

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SOCI 300	3	HEFS 417	3
SPCH 319	3	HEFS 337	3
PHED 442	3	HEFS 419	3
HEFS 414	3	HEFS 600	3
HEFS 420	3	Cognate Area Elective*	<u>3</u>
HEFS 430	<u>3</u>		15
	18		

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPED 536	3	HEFS 634	3
HEFS 551	3	HEFS 619 <sup>1</sup>	6
HEFS 514 <sup>1</sup>	3	Cognate Area Elective*	<u>3</u>
HEFS 612 <sup>1</sup>	3		12
HEFS 639	<u>3</u>		
	15		

Total Credit Hours: 128

<sup>1</sup> HEFS Core Courses

<sup>2</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African-American studies and a three-hour course in Global Studies.

\* Select courses from one of the cognate area(s).

Child Development and Family Studies students are required to select a cognate area, which is designed to allow the student to specialize in a major-related discipline. All students are required to complete **9** hours of course work in one of the following disciplines, **or** select from either area to create a multidisciplinary focus. The multidisciplinary focus can be selected only with the approval of the academic advisor or Department Chairperson.

### COGNATE AREA ELECTIVES

<b><u>CHILD PUBLIC POLICY &amp; ADMINISTRATION</u></b>	<b><u>CHILD THERAPY</u></b>	<b><u>CHILD &amp; FAMILY SERVICE COORDINATION</u></b>
POLI 150	PSYC 320	SOCI 100
POLI 250	PSYC 324	SOCI 300
POLI 340	PSYC 325	SOCI 308
POLI 350	PSYC 420	
POLI 420	PSYC 434	SOWK 133
	PSYC 644	SOWK 372
BUAD 220	PSYC 645	SOWK 412
BUAD 341		SOWK 472
BUAD 422		
BUAD 425		
BUAD 426		
BUAD 430		

### REQUIRED MAJOR COURSES FOR CHILD DEVELOPMENT EARLY EDUCATION AND FAMILY STUDIES BIRTH-KINDERGARTEN

#### (Teacher Licensure)

HEFS 101	HEFS 414	HEFS 514
HEFS 310	HEFS 418	HEFS 612
HEFS 311	HEFS 419	HEFS 634
HEFS 337	HEFS 430	HEFS 639
HEFS 401		

*A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.*

### CURRICULUM GUIDE FOR CHILD DEVELOPMENT EARLY EDUCATION AND FAMILY STUDIES BIRTH-KINDERGARTEN

#### (Teacher Licensure)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HEFS 101 <sup>1</sup>	1	CHEM 100	3
Social Science Elective <sup>2</sup>	3	Social Science Elective <sup>2</sup>	3
BIOL 100	4	CHEM 110	1
PHED 200	2	PHED	1
	16	SPCH 250	<u>3</u>
			17

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 310 <sup>1</sup>	3	ENGL 201	3
BUED 334	3	HEFS 311	3
SOCI 300	3	CUIN 301	2
ENGL 200	3	HEFS 401	3
CUIN 101	1	HEFS 418	3
CUIN 102	2	PHED 442	2
PSYC 320	<u>3</u>	Electives	<u>2-3</u>
	18		18

*Milestone: Students must pass PRAXIS I and be admitted into the Teacher Education Program. Students must maintain a cumulative 2.8 GPA.*

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 430	3	CUIN 436	3
SPCH 319	3	CUIN 611	3
HEFS 514 <sup>1</sup>	3	SPED 350	3
HEFS 414	3	HEFS 600	3
CUIN 400	3	HEFS 337	<u>3</u>
HEFS 419	<u>3</u>		15
	18		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MUSI 609	3	HEFS 634	3
HEFS 639	3	CUIN 560	6
HEFS 612 <sup>1</sup>	3	Elective	<u>3</u>
SPED 536	3		12
Electives	<u>3</u>		
	15		

Total Credit Hours: 127

<sup>1</sup> HEFS Core Courses

<sup>2</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African-American studies and a three-hour course in Global Studies.

## REQUIRED MAJOR COURSES FOR FAMILY AND CONSUMER SCIENCES EDUCATION

HEFS 101	HEFS 310	HEFS 503
HEFS 130	HEFS 400	HEFS 505
HEFS 181	HEFS 401	HEFS 514
HEFS 183	HEFS 679	HEFS 604
HEFS 281	HEFS 403	HEFS 612
HEFS 300	HEFS 500	

*A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.*

# CURRICULUM GUIDE FOR FAMILY AND CONSUMER SCIENCES EDUCATION

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HEFS 101 <sup>1</sup>	1	HEFS 183	3
Social Science Elective <sup>2</sup>	3	Social Science Elective <sup>2</sup>	3
HEFS 181	3	PHED 101	1
BIOL 100	<u>4</u>	HEFS 130	<u>3</u>
	17		16

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SOCI 100 or SOCI 200	3	SPCH 250	3
ENGL 200	3	CHEM 104	3
HEFS 281	3	CHEM 114	1
PHED 200	2	ENGL 201	3
CUIN 101	1	CUIN 301	2
CUIN 102	2	Elective	<u>3</u>
Elective	<u>3</u>		15
	17		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 400	3	HEFS 403	3
HEFS 300	3	HEFS 500	3
HEFS 401	3	CUIN 436	3
ECON 300	3	HEFS 503	3
HEFS 310 <sup>1</sup>	3	HEFS 400	3
PSYC 320	<u>3</u>	Elective	<u>3</u>
	18		18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 612 <sup>1</sup>	3	HEFS 604	3
HEFS 514 <sup>1</sup>	3	CUIN 560	6
HEFS 679	3	CUIN 624	<u>3</u>
CUIN 528	3		12
HEFS 505	<u>3</u>		
	15		

Total Credit Hours: 127

<sup>1</sup> HEFS Core Courses

<sup>2</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African-American studies and a three-hour course in Global Studies.

## REQUIRED MAJOR COURSES FOR FOOD AND NUTRITIONAL SCIENCES – FOOD SCIENCE

HEFS 101	HEFS 612	HEFS 633
HEFS 236	HEFS 618	HEFS 638
HEFS 310	HEFS 631	HEFS 643
HEFS 514		

A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.



# CURRICULUM GUIDE FOR FOOD AND NUTRITIONAL SCIENCES – FOOD SCIENCE

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
HEFS 101 <sup>1</sup>	1	BUAD 220	3
Social Science Elective <sup>2</sup>	3	Social Science Elective <sup>2</sup>	3
PHED 101	1	PHED 103-120	1
BIOL 100 or 160	<u>4</u>	SPCH 250	<u>3</u>
	16		17

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
ENGL 200	3	ENGL 201	3
PHYS 110	2	MATH 224	3
PHYS 111	1	AGEC 330	3
HEFS 236	3	Elective	<u>3</u>
AGEC 240	<u>3</u>		16
	16		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 220	4	BUAD 422	3
ANSC 312	3	BUAD 430	3
CHEM 221	3	ANSC 615	3
CHEM 223	2	CHEM 222	3
HEFS 310 <sup>1</sup>	<u>3</u>	CHEM 224	2
	15	ANSC 451 or 556	<u>3</u>
			17

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 643	3	HEFS 633	3
HEFS 618	1	HEFS 638 or 612 <sup>1</sup>	3
HEFS 337	3	HEFS 514 <sup>1</sup>	3
BIOL 620	3	HEFS 631	3
CHEM 251	2	AGEN 522	<u>3</u>
CHEM 252	1		15
EASC 622	<u>3</u>		
	16		

Total Credit Hours: 128

<sup>1</sup> HEFS Core Courses

<sup>2</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African-American studies and a three-hour course in Global Studies.

## REQUIRED MAJOR COURSES FOR FOOD AND NUTRITIONAL SCIENCES – DIETETICS

HEFS 101	HEFS 337	HEFS 632
HEFS 130	HEFS 344	HEFS 637
HEFS 236	HEFS 514	HEFS 648
HEFS 246	HEFS 544	HEFS 652
HEFS 310	HEFS 601	HEFS 679
HEFS 332	HEFS 630	

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## CURRICULUM GUIDE FOR FOOD AND NUTRITIONAL SCIENCES – DIETETICS

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
PHED 101	1	PHED 103-120	1
HEFS 101 <sup>1</sup>	1	ENGL 200	3
Social Science Elective <sup>2</sup>	3	Social Science Elective <sup>2</sup>	3
BIOL 100	<u>4</u>	HEFS 130	<u>3</u>
	16		17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
HEFS 236	3	BIOL 361	4
ENGL 201	3	HEFS 246	3
PSYC 320	3	HEFS 337	3
AGEC 446	<u>3</u>	BUAD 341	<u>3</u>
	16		17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 310 <sup>1</sup>	3	CHEM 251	2
HEFS 344	3	CHEM 252	1
BIOL 220	4	MATH 224 or SOCI 203	3
CHEM 221	3	HEFS 601	4
CHEM 223	<u>2</u>	HEFS 332	2
	15	Elective	<u>3</u>
			15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 632	3	HEFS 652	4
HEFS 630	3	HEFS 648	3
HEFS 679	3	HEFS 544	3
ENGL 331 or BUED 360	3	HEFS 514 <sup>1</sup>	3
Free Elective	<u>3</u>	HEFS 637 or AGECE 646	<u>3</u>
	15		16

Total Credit Hours: 128

<sup>1</sup> HEFS Core Courses

<sup>2</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African-American studies and a three-hour course in Global Studies.

## **COURSE DESCRIPTIONS IN HUMAN ENVIRONMENT AND FAMILY SCIENCES**

### **HEFS 101. Introduction to Family and Consumer Sciences** **Credit 1(1-0)**

This course is designed to assist students in making personal adjustments to college living; it provides an introduction to the broad areas of family and consumer sciences and a study of the curricula and professional opportunities in the field. (F)

### **HEFS 104. The Individual and His Family in Contemporary Society** **Credit 1(1-0)**

This course focuses on individual development in the family, the changing needs and roles of individuals due to emerging social forces, and the role of the Human Environment and Family Sciences professional in developing strategies for successful families. (DEMAND)

### **HEFS 130. Food Preparation/Meal Management** **Credit 3(2-2)**

This is an introductory food course that includes basic principles, techniques and management used in food preparation and preservation, which develop skills in planning, preparing and serving nutritious meals for families of various lifestyles. (F)

### **HEFS 133. Family Foods** **Credit 3(2-2)**

This course is study of the application of elementary principles of nutrition and cookery to the planning, preparation and serving of simple meals designed to meet the needs of all family members. (S)

### **HEFS 135. Food and Man's Survival** **Credit 3(3-0)**

This course acquaints students with the most common information regarding foods, nutrition and health, with attempts to dispel misconceptions about food properties and factors affecting the quality of foods. Areas of discussion include man's struggle for foods; chemical additives and food safety; modern food preservation; organic and health foods; and nutrition and the consumer. (DEMAND)

### **HEFS 181. Social-Psychological Aspects of Dress** **Credit 3(3-0)**

This course is a basic study of the social, psychological, cultural and economic influences on contemporary fashions. (F)

### **HEFS 183. Textiles** **Credit 3(2-2)**

This course is an introduction to the study of textiles, their sources, characteristics and production; the performance, use and care of fabrics. (S)

### **HEFS 200. Introduction to Family and Consumer Sciences Education** **Credit 2(2-0)**

Historical background, philosophy and objectives of education in the United States; educational, social and political movement affecting vocational education in the public schools with emphasis on the requirements of North Carolina. (DEMAND)

### **HEFS 236. Introduction to Food Science** **Credit 3(2-2)**

This course is an introductory study of the nature of raw foods and behavior of food components during handling and processing. Key methods and principles of food preservation will also be discussed. (F)

### **HEFS 246. Purchasing in Food Service** **Credit 3(3-0)**

A study of problems involved in the purchase of food, equipment and other expendable supplies for food service establishments are the major topics of this course. Prerequisites: HEFS 130 and AGECE 446. (S)

### **HEFS 280. Introduction to Fashion Merchandising** **Credit 3(3-0)**

This course is an introduction to apparel business including discussions of current trends in fashion merchandising, fashion coordination and analysis of the function of fashion merchandising. (S)

**HEFS 281. Apparel Construction and Evaluation****Credit 3(1-3)**

This course is an introduction to the fundamental principles of clothing construction using a commercial pattern with emphasis on fitting, pattern adjustments, garment and basic construction skills. Laboratory experience is required. (F)

**HEFS 300. Program Planning in Family and Consumer Sciences K-12****Credit 3(3-0)**

This course involves participation in planning Family & Consumer Sciences programs for occupational education in public schools K-12. (Career awareness, middle school, exploratory, comprehensive occupational family and consumer sciences, youth and adult program). (DEMAND)

**HEFS 310. Introduction to Human Development****Credit 3(3-0)**

This course is an introduction to the human development process covering the life span from prenatal, childhood, adolescence, adulthood, and aging through death. The social, psychological, cognitive, physical and moral characteristics of each stage are studied. Prerequisite: HEFS 101. (F;S;SS)

**HEFS 311. Child Development: Prenatal Through Early/Middle Childhood****Credit 3(2-2)**

This course is a study of the child's sequential development at different stages - conception through late childhood. Historical and theoretical approaches to child development programs for young children will be studied. Field experiences are required. (F;S)

**HEFS 312. Adolescence and Young Adulthood****Credit 3(3-0)**

This course provides a comprehensive study of the physical, mental, and psychological factors of development from late childhood through adulthood. Observation required. Prerequisite: Instructor's permission. (DEMAND)

**HEFS 314. Human Ecology of the Family****Credit 3(3-0)**

This course is the study of the family as environment and within environment. Relations of values, goals, standards and decision-making in the management of the family. The unique role of the family in the social, economics, and political system. Prerequisite: SOCI 100. (DEMAND)

**HEFS 332. Cultural Aspects of Food****Credit 2(2-0)**

A study of the influence of cultural and socioeconomic factors on food patterns and nutritional status of selected ethnic groups. Prerequisite: HEFS 337. (S; DEMAND)

**HEFS 337. Introduction to Human Nutrition****Credit 3(2-2)**

This course provides an introductory approach to the principles of nutrition as they relate to human requirements for nutrients during the life cycle; the significance of and mechanism through which nutrients meet these biological needs during the life cycle. Prerequisites: CHEM 106 and 116. Corequisite: BIOL 361. (F;S;SS)

**HEFS 344. Organizational Management in Food Service****Credit 3(3-0)**

This course is designed to study the organizations, management and administration of various food service establishments and the inclusion of personnel management. Prerequisites: HEFS 130, 246, and AGECE 446. (F)

**HEFS 380. Visual Merchandising****Credit 3(3-0)**

This course explores the use of visual merchandising and promotional techniques for textile and non-textile products. Prerequisite: HEFS 181, 280 or instructor's permission. (F)

**HEFS 382. Creative Apparel Design I (Flat Pattern)****Credit 3(2- 2)**

This course examines the application of principles of creative design by the use of flat pattern techniques. Laboratory experience is required. Prerequisite: HEFS 281. (S)

**HEFS 384. Historic Developments of Costumes and Textiles****Credit 3(3-0)**

This course examines the evolution of dress through the study of western dress from ancient to modern times. Individual research is required. Prerequisites: HEFS 181 and 183. (S)



**HEFS 400. Contemporary Housing** **Credit 3(2-2)**

This course is a study of problems in house planning to meet family needs. Emphasis is placed on the study of house designs, methods of financing and location. **(DEMAND)**

**HEFS 401. Family Systems** **Credit 3(3-0)**

The development of the family and the impact of environmental systems on the life cycle as families move from stages of effective status to crisis status. **(S)**

**HEFS 403. Family Economics** **Credit 3(3-0)**

This course is the study of financial budgeting and planning strategies during the various stages of the family life cycle. Consideration is given to multifaceted consumer problems and resources for problem resolution. **(DEMAND)**

**HEFS 410. Practicum in Child Care** **Credit 6(2-8)**

Six child-care competencies are required for the Child Development Associate credential to be awarded by the National Consortium Credentialing Office. The student will demonstrate mastery of each competency. Prerequisite: Only continuing education students may enroll. **(DEMAND)**

**HEFS 414. Creative Expression in Early Education** **Credit 3(2-2)**

Materials, methods and evaluation used in the development of cognitive, affective and psychomotor behaviors in dramatic play, music, art and literature will be focus areas. In addition, career opportunities in curricula and interagency services to assist families in a collaborative relationship will be emphasized. Field based teaching experiences are included in this course. Prerequisites: HEFS 310, 311, and 418. **(F)**

**HEFS 415. Materials, Methods and Evaluation II** **Credit 3(3-0)**

This course examines the materials, methods and evaluation used in the development of cognitive, effective, and psychomotor behaviors. Focus areas: Social Studies, Science, Math, Health and Safety. Prerequisite: HEFS 414. **(DEMAND)**

**HEFS 417. Parent Education** **Credit 3(3-0)**

Parental interactions in the child's development at home, in the school and in the community. The effective use of assistance and volunteers in the school environment as well as elements of creative parenting in a rapidly changing social environment are also studied. **(DEMAND)**

**HEFS 418. Foundations of Early Education and Family Studies** **Credit 3(3-0)**

This course is the study of the historical, sociological and philosophical background of typical and atypical development in young children; and a review of the dynamic of the family and current issues related to the teaching profession. Emphasis will be placed on curriculum planning, the integrated day, scheduling, and the curriculum development. Field experiences are included in this course. Prerequisite: HEFS 310. **(S)**

**HEFS 419. Practicum in Community Service** **Credit 3(1-4)**

This course includes practical field experience in community service agencies concerned with all areas of childcare and family development. Emphasis will be placed on services to young children. **(S)**

**HEFS 420. Preschool Administration and Supervision in Divers Settings** **Credit 3(3-0)**

This course is an introduction to business administration, organizations, and supervision in diverse early education and family interagency settings. Emphasis is placed on key administrative and human resources concepts, practices, and issues related to the administrating, planning, organizing, staffing, financing, decision-making, supervising, and evaluating early education and family interagency settings. **(F)**

**HEFS 421. The Cognitively Oriented Preschool Curriculum** **Credit 3(3-0)**

Methods, materials and strategies in preschool education as found in the cognitively oriented curriculum. Emphasis will be placed on development of skills in teaching. **(DEMAND)**

**HEFS 425. Fashion Motivation****Credit 3(3-0)**

This course is the study of the interaction of the social, psychological and economical aspects of dress. Prerequisite: HEFS 424, PSYC 320, ANTH 200 or 300. (DEMAND)

**HEFS 430. Assessment and Evaluation of Young Children****Credit 3(3-0)**

A study of the principles and practices of observing, recording and analyzing behavior and development of young children. Attention is focused on naturalistic observations, developmental theories, diagnostic information and an analysis of interpreting play, language and physical development of young children. Field experiences are included in this course. Prerequisites: HEFS 310, 311, and 418. (F)

**HEFS 480. Computer Assisted Design for Apparel****Credit 3(2-2)**

This course is an introduction to the use of the computer for sketching, pattern making, pattern grading and making markers. Prerequisite: HEFS 280. (S)

**HEFS 482. Global Trends and National Perspectives in  
Clothing and Textiles****Credit 3(3-0)**

This course provides an in-depth investigation of global and national trends as they relate specifically to the textile industry. Prerequisites: HEFS 181 and 280. (S)

**HEFS 483. Principles of Apparel Evaluation****Credit 3(3-0)**

This course is an individual study of the factors that determine the cost, price, quality, performance and value of textiles and apparel. Prerequisites: HEFS 183 and 281. (S)

**HEFS 485. Fashion Marketing and Merchandising****Credit 3(3-0)**

This course emphasizes the functions and responsibilities of the fashion merchandiser, and considers various retail establishments. A synthesis of business knowledge and its application to the fashion field will be included. Prerequisite: HEFS 280. (F)

**HEFS 487. Cooperative Training in Business and Industry****Credit 3(3-0)**

Students will be employed for a minimum of 200 hours in their major field of work. They will be evaluated on report by their employer and a University coordinator. Prerequisite: Senior standing. (S)

**HEFS 489. Creative Apparel Design II (Draping)****Credit 3(2-2)**

This course will focus on the application of principles of creative apparel design by the use of the draping method. Prerequisites: HEFS 281 and 382. (F)

**HEFS 500. Occupational Family and Consumer Sciences****Credit 3(1-4)**

This course examines the organization and administration of occupational wage-earning programs at the upper high school level-methods and instructional media. Work experiences require at least one area of Family and Consumer Sciences occupational cluster. (DEMAND)

**HEFS 503. Concepts in Esthetics Ecology****Credit 3(2-2)**

This course is a study of housing and interior requirements for individuals and families with a focus on plans, design, furnishing and aesthetic. (DEMAND)

**HEFS 505. Home Management and Equipment****Credit 3(1-4)**

This course examines the use of management principles in effecting an orderly management of the home and all of its environment. The use of basic equipment in the home that makes for an efficient and well-kept household will be emphasized. Selection and coordination of equipment for effective living is demonstrated. (DEMAND)

**HEFS 514. An Integrative Approach to Family and Consumer Sciences****Credit 3(3-0)**

The basic unifying concepts of family and consumer sciences are used to assist in the resolution of social, political, economic and ethical issues currently affecting contemporary families. The basic unifying concepts are: human development, interpersonal relations, socialization, values, management, consumer choice and coping with daily activities. Prerequisite: HEFS 310. (F)

**HEFS 522. Food Engineering****Credit 3(2-2)**

The fundamentals of heat transfer, fluid flow, refrigeration, evaporation and other unit operations in the food processing industry. Application of engineering principles and concepts to the processing of food. Prerequisite: PHYS 320 or 225. **(DEMAND)**

**HEFS 541. Food Packaging****Credit 2(2-0)**

The characteristics of packaging materials, strength, elasticity, permeability, food packaging machines, adhesives, as related to products wholesomeness and package design as a form of advertising will be studied. Prerequisite: CHEM 106 or 107. **(DEMAND)**

**HEFS 544. Internships****Credit 3(0-6)**

The student participates in a temporary period of supervised work experience, which provides him/her an opportunity to apply theoretical knowledge to a work situation. The internship is designed to give students supervised work experience in Food Administration, Nutrition/Dietetics and Food Science. Prerequisite: Junior standing. **(F)**

**HEFS 549. Food Consultant for Older Adults****Credit 3(3-0)**

Techniques of consultation with older adults on diets, food choices, food fads, planning, purchasing and preparational procedures will be examined. Menus for limited incomes will be emphasized. **(DEMAND)**

**HEFS 550. Administrative Policies and Resources Management****Credit 3(3-0)**

This course is designed to introduce ethical and legal issues, professional liability, budget policies, and resources management problems faced by managers in early education and family interagency settings. Prerequisite: HEFS 420. **(F)**

**HEFS 551. Multicultural Perspective****Credit 3(3-0)**

This seminar is designed to develop knowledge skills, and dispositions focused on multicultural anti-bias perspective in the field of early education and family systems. Critical review of research and literature emphasizing diversity topics will be used as a framework for discussion. Students will participate in applied activities designed to foster cultural awareness culturally and anti-bias sensitive practices, and advocacy in setting such as private and public early childhood settings, schools, hospital-based settings, family agencies, and mental health agencies. **(S)**

**HEFS 552. Independent Readings in Early Education and Family Studies** **Credit 3(3-0)**

This course permits a student to undertake an in-depth analysis of various problems or issues in child development, early education, family studies, teacher preparation, multiculturalism, and developmental learning principles through individual study. The problem or issue may be selected from the scholarly literature in the field or the professional workplace. Prerequisites: HEFS 418 and 600. **(F)**

**HEFS 600. Approaches to Developmental and Culturally  
Appropriate Curricula****Credit 3(2-2)**

This course provides a review of preschool curriculum as it relates to developmental learning patterns; and the nature of knowledge, societal forces and interagency services. Also, this course develops an understanding of learning principles, developmentally appropriate resources and various educational strategies that can be organized to support an effective environment for young children. Special emphasis will be placed on screening and assessment procedures, and formulating objectives and strategies for working with professional team members. Laboratory experiences are required. **(S)**

**HEFS 601. Quantity Foods****Credit 4(1-6)**

The application of principles of cookery to the preparation and service of food for group feeding with emphasis on menu planning, work schedules, cost and portion control, distribution and



service are implemented in a laboratory setting. Prerequisites: HEFS 130, 246, 344, and AGEC 446. (F)

**HEFS 603. Special Problems in Family and Consumer Sciences** **Credit 3(1-4)**  
Problems in the various areas of Family & Consumer Sciences may be chosen for individual study. (DEMAND)

**HEFS 604. Seminar in Family and Consumer Sciences Education** **Credit 3(3-0)**  
Consideration of problems resulting from the impact of social change in the various fields of Human Environment and Family Sciences, and the review of research and professional development will be included in this course. (S)

**HEFS 605. Human Environment and Family Sciences** **Credit 6(0-12)**  
This is a course designed to provide opportunity for students and specialists to study historic and contemporary points of interest abroad. Exposure to customs, cultures and industries in an international setting will provide the basis for broader background and experiences in selected areas of human environment and family sciences. (DEMAND)

**HEFS 606. Cooperative Extension** **Credit 3(3-0)**  
This course is an introduction to the organization, philosophy, financing, personnel, clientele and programs of Cooperative Extension Service. (DEMAND)

**HEFS 607. Cooperative Extension - Field Experience** **Credit 3(0-6)**  
The course includes field experience to provide an opportunity for students to become acquainted with the role of country personnel, office organizations and programs in Cooperative Extension Service. (DEMAND)

**HEFS 608. Teaching Adult and Youth in Out-of-School Groups** **Credit 3(0-6)**  
The design and development of informal educational programs for youth and adults in out-of-school settings. Prerequisite: HEFS 606. (DEMAND)

**HEFS 612. Senior Seminar** **Credit 3(3-0)**  
Students' review and present major research findings in the various disciplines of Family and Consumer Sciences. (Required of Human Environment and Family Sciences Majors). Prerequisite: Senior year only. (F)

**HEFS 613. Substance Abuse** **Credit 3(3-0)**  
Alcoholism and drugs, as well as their inherent effects upon the family and society will be examined. Problems in the family, related to the individuals, business and industry. Additional focus will be given to treatment, agencies and methods of recovering self-esteem. (SS)

**HEFS 618. Food Technology Seminar** **Credit 1(1-0)**  
A review and discussion of selected topics and recent advances in the fields of animal and food science are emphasized. Prerequisite: Senior standing. (DEMAND)

**HEFS 619. Community of Practice Internship** **Credit 6(1-10)**  
This course emphasizes the application and practice of methods, techniques, and materials of field-based experience in infant/toddler programs, intermediate care programs, hospitals, preschool, shelters and various family service agencies. These internships will include observation and field-based experiences under supervision. A minimum of 120 clock hours is required during internship experiences. Prerequisites: HEFS 419, 514, and SPED 536. (F;S)

**HEFS 630. Advanced Nutrition** **Credit 3(3-0)**  
Intermediate metabolism and interrelationships of organic and inorganic food nutrients in human biochemical functions will be studied. Prerequisites: HEFS 337, CHEM 251, 252 or equivalent. (F)



**HEFS 631. Food Chemistry****Credit 3(2-2)**

This course is the study of food components, their interactions and reactions with emphasis on biochemical changes in fruits and vegetables on post harvest storage, postmortem biochemical changes in meat and fish, browning reactions, lipid oxidation and other chemical alternations in food. Prerequisite: HEFS 236. (F)

**HEFS 632. Maternal and Lifespan Nutrition****Credit 3(3-0)**

This course emphasizes the energy and nutrient requirements and feeding practices for stages of the life span. Influences of nutrition on growth and development are discussed. The nutritional quality of food, physiological development, growth assessment, dietary evaluation and nutrition assessment for various stages of the lifespan are covered. Prerequisite: HEFS 332, 337 or instructor's permission. (F)

**HEFS 633. Food Analysis****Credit 3 (1-4)**

This course is the study of fundamental chemicals, physical and sensory aspects of food composition as they relate to physical properties, acceptability and nutritional values of foods. Prerequisites: CHEM 102, 112, and HEFS 236. (DEMAND)

**HEFS 634. Independent Study in Early Education and Family Studies****Credit 3(3-0)**

This course includes a synthesis of selected research for individual and group study, using projects, workshops and colloquia. The focus of the research may be an in-depth study of materials previously investigated or explored in early education, family studies, teacher preparation and developmental learning. Prerequisites: HEFS 418, 514, and SPED 536. (S)

**HEFS 635. Introduction to Research Methods in Food and Nutrition****Credit 3(0-6)**

This course provides laboratory experiences in the use of methods applicable to food and nutrition research. Prerequisite: Consent of the instructor.(DEMAND)

**HEFS 636. Food Promotion****Credit 4(1-6)**

This is a course, which gives experiences in the development and testing of recipes. Opportunities will be provided for demonstrations, writing, and photography with selected businesses. (DEMAND)

**HEFS 637. Special Problems in Food and Nutrition****Credit 3(0-6)**

This course provides independent study/research in the areas of Food and Nutrition or Food Science. Prerequisites: Junior, senior, graduate standing, and consent of instructor. (S)

**HEFS 638. Sensory Evaluation****Credit 3(2-2)**

This course is a study of the color, flavor, aroma and texture of foods by the use of sensory evaluation methods. Prerequisites: HEFS 236 and 337. (S)

**HEFS 639. Applied Principles for Active Learning****Credit 3(2-2)**

This course involves the study of basic principles, materials, and evaluation measures underlying acting leading experiences in improving children's intellectual styles and social relations. Special attention is given to goals and objectives, daily routine, teacher-made materials, questioning techniques and ideas for small and large group activities. Simulated teaching experiences are required. Prerequisites: HEFS 310, 311, 414, and 600. (F)

**HEFS 640. Geriatric Nutrition****Credit 3(3-0)**

Multi-disciplinary approaches to geriatric foods, nutrition and health problems. Evaluation of nutritional status and nutrition care of the elderly is emphasized. Field experiences: nursing home and other community agencies. Prerequisite: HEFS 337. (DEMAND)

**HEFS 641. Current Trends in Food Science****Credit 3(3-0)**

This course is the study of recent development in food science and their implications for food scientists, nutritionists, dietitians and other professions in the food industry and related professions. (DEMAND)

**HEFS 643. Food Preservation****Credit 3(2-2)**

This course is a study of current methods of preserving foods - canning, freezing, dehydration, radiation and fermentation. Prerequisite: HEFS 236 or equivalent. (DEMAND)

**HEFS 645. Special Problems in Food Administration****Credit 2(0-4)**

Individual work on special problems in food administration is required. (DEMAND)

**HEFS 648. Community Nutrition****Credit 3(2-2)**

This course provides an introduction and review of major communication and education skills that dietitians and nutritionist use in techniques of interviewing and counseling in community nutrition programs. Materials, methods and goals in planning, assessing, organizing and marketing nutrition for health promotion and prevention of disease. Evaluation of food and nutrition program at State and Federal levels. Prerequisites: HEFS 679. (S)

**HEFS 650. International Nutrition****Credit 3(3-0)**

This course is a study of an ecological approach to the hunger and malnutrition in technologically developed and developing countries. Focus is on integrated intervention programs, projects, and problems. Opportunities to participate in national and international internships through cooperative arrangements are available. (DEMAND)

**HEFS 651. Food Safety and Sanitation****Credit 3(3-0)**

This course covers practices and procedures for hygienic food handling, processing, sanitation, food safety laws and implementation of Hazard Analysis Critical Control Point (HACCP) system in food processing and food service operations. Emphasis is placed on sanitation management, hazards, standards and corrective actions for food service operations that are critical control points for food safety. Practical measures for prevention of food borne diseases and effects of microorganisms, toxins, foreign objects and physical damage on the safety and quality of foods are discussed. Prerequisite: BIOL 220. (S)

**HEFS 652. Diet Therapy****Credit 4(3-2)**

This course is a study of the principles of nutritional sciences in the treatment and management of nutrition related diseases. Course content includes etiology, prevalence, path-physiology, biochemical, clinical and nutritional needs and diet modification in the treatment of diseases. Prerequisites: HEFS 130, 337, and 630. (S)

**HEFS 653. Food Biotechnology****Credit 3(1-4)**

This course covers the impact of biotechnology on food production. It covers classical to modern day food biotechnology and beyond. Modern day genetic tools, as applied to food biotechnology, will be examined. A major focus will be on the improvement of microbes used in food production by modern biotechnological approaches. Prerequisite: BIOL 220. (S)

**HEFS 655. Observation and Student Teaching in Early Education and Family Studies (B-12)****Credit 9(1-16)**

The application and practice of methods, techniques, and materials of instruction in a real classroom situation under supervision will be studied. The course includes teaching purposeful observation, organizing teaching materials, participation in other activities, and parent-teacher association activities. See: *University Student Teaching Handbook* for specific requirements. (DEMAND)

**HEFS 664. Occupational Exploration in Middle Grades****Credit 3(3-0)**

This course is designed for persons who teach or plan to teach middle grades occupational exploration in the curriculum. Sources and uses of occupational information, approaches to middle school teaching, and philosophy and concepts will be taught in cooperation with the Department of Business Education and Administrative Services, Family and Consumer Sciences and Industrial Education. (DEMAND)

**HEFS 665. Occupational Exploration in the Middle Grade****Family and Consumer Sciences****Credit 3(3-0)**

Emphasis is placed on curriculum, methods and techniques of teaching and resources and facilities for teaching in the service occupations cluster which involves the areas of consumer and family sciences education, personal service, public service, hospitality and recreation and health occupations. **(DEMAND)**

**HEFS 679. Nutrition Education****Credit 3(3-0)**

This course covers the philosophy, principles, methods and materials involved in nutrition education. The application of nutrition knowledge and skills in the development of the nutrition education curriculum and programs in schools and communities are implemented. Prerequisites: HEFS 332 and 337. Students must be advanced undergraduate or graduate level. **(S)**

**DIRECTORY OF FACULTY**

**Mohamed Ahmedna** ..... **Adjunct Assistant Professor**

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**Chung W. Seo** ..... **Professor**

B.S., M.S., Korea University; Ph.D., Florida State University



- Gladys G. Shelton. .... Associate Professor and Chairperson**  
 B.S., North Carolina Central University, M.S., Cornell University, Ph.D., Virginia Polytechnic Institute and State University
- Claudette Smith. .... Cooperative Extension Faculty**  
 B.S., North Carolina A&T State University; M.S., Ph.D., Ohio State University
- Ellen Smoak. .... Cooperative Extension Faculty**  
 B.S., M.S., Ph.D., University of North Carolina at Greensboro
- Sheilda Sutton. .... Cooperative Extension Faculty**  
 B.S., North Carolina Central University, M.S., North Carolina State University
- Carolyn S. Turner. .... Associate Professor**  
 B.S., M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University
- Wilda Wade. .... Cooperative Extension Faculty**  
 B.S., M.S., R.D., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro
- Jane Walker .... Associate Professor**  
 B.S., Appalachian State University; M.S., Virginia Polytechnic Institute and State University; Ph.D., University of North Carolina at Greensboro

**FACULTY EMERITI**

- Harold E. Mazyck. .... Professor**  
 B.S., South Carolina State College; M.A., New York University; Ph.D., University of North Carolina at Greensboro



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## **Department of Natural Resources and Environmental Design**

<http://www.ag.ncat.edu/academics/natres/index.html>

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**G. Bhaskar Reddy, Chairperson**

### **OBJECTIVES**

The objectives of the Department of Natural Resources and Environmental Design are to meet its responsibilities to society by providing training for professional agriculturists, natural resources specialists, landscape architects, agricultural and biosystems engineers and environmentalists who can identify, analyze, and solve the problems of today, as well as new problems that may arise in the future. Realizing the dynamic and ever changing nature of modern society, the Department seeks to provide its students with the tools of analysis as well as facilities for applying the natural, physical, and social sciences to thinking processes that will enable them to relate to man's present and future needs in managing his environment.

### **DEGREES OFFERED**

Agricultural Science, Earth and Environmental Science (Earth and Environmental Science) - Bachelor of Science

Agricultural Science, Natural Resources (Plant Science, Soil Science, Environmental Horticulture) Bioenvironmental Engineering – Bachelor of Science

Landscape Architecture – Bachelor of Science

Plant and Soil Science – Master of Science\*

*\*See the Graduate School Bulletin*

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs and qualification for the Bachelor of Science degree in the Department of Natural Resources and Environmental Design are based upon the general admission and graduation requirements of the University. For admission to Bioenvironmental Engineering see respective handbooks and program requirements elsewhere in this catalog.

### **DEPARTMENTAL REQUIREMENTS**

Majors in the Department of Natural Resources and Environmental Design must complete a minimum of 124 semester hours of University courses. Included in the 124 hours are thirty hours in a major elective depending on the degree program. A minimum grade of "C" may be required for major courses. A Waste Management Certificate is awarded with the Bachelor of Science degree to students who complete a minimum of 18 credit hours of courses identified as waste management core courses. There is also a biotechnology certificate for students who meet the requirements.

### **CAREER OPPORTUNITIES**

The Department of Natural Resources and Environmental Design provides professional education for a wide range of career opportunities. Graduates of the program work in such industrial areas as land-use planning, environmental control, natural resources management, waste disposal, water and soil quality, and policy analysis, greenhouse production, landscape contracting, nursery/garden center management, landscape architecture and regional and urban planning. Career opportunities also include work with federal, state, and local govern-

ment agencies involved in regulation, resource management, and policy development. Students have found employment with consulting firms involved in solving environmental and production problems, as well as working as a licensed landscape architect providing professional design consultations. Graduates also are prepared for graduate school to pursue degrees in the environmental sciences, horticulture and landscape architecture.

## REQUIRED MAJOR COURSES FOR AGRICULTURAL SCIENCE, EARTH AND ENVIRONMENTAL SCIENCES

EASC 201	EASC 644	EASC 616
GEOG 200	SLSC 634	EASC 622
SLSC 338	BIOL 221	EASC 666
NARS 520	EASC 309	EASC 699
SLSC 621	EASC 444	

## CURRICULUM GUIDE FOR AGRICULTURAL SCIENCE, EARTH AND ENVIRONMENTAL SCIENCES

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
HIST Elective	3	HIST Elective	3
MATH 111	4	MATH 112	4
PHED Elective	1	PHED Elective	1
CHEM 106	3	CHEM 107	3
CHEM 116	<u>1</u>	CHEM 117	<u>1</u>
	15		15

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL Elective	3	ENGL Elective	3
EASC 201	3	Electives (Major Area) <sup>1</sup>	4
BIOL 221	4	EASC 309	3
NARS 110	3	MATH 224	3
SPCH 250	<u>3</u>	GEOG 200	<u>3</u>
	16		16

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 221	3	Electives (Major Area)	9
CHEM 223	2	BIOL 621/SLSC 621	4
PHYS 225	3	NARS 520	<u>1</u>
PHYS 235	1		14
SLSC 338	4		
EASC 622	<u>3</u>		
	16		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EASC 616	3	EASC 666	3
Electives (Major Area) <sup>1</sup>	3	EASC 699	3
SLSC 634	4	Electives (Major Area) <sup>1</sup>	3
SLSC 633	4	Electives (Non Major)	<u>6</u>
Electives (Major Area) <sup>1</sup>	<u>3</u>		15
	17		

Total Credit Hours: 124

<sup>1</sup> Major Electives: EASC 433, 444, 624, 408, 625, 644, 330, BIOL 621, 301, CIEN 310, 618, AGEN 213, 204, 360, HIST 210, SLSC 609, EASC 627, SLSC 632, CHEM 222, 244, PHYS 101, FORS 618, AREN 221, HIST 307, BUAD 341, ANSC 637, LASC 636 CM 593, OSH 311, 312, 411, 413, AGED 607 and approved consortium courses. These courses must be approved by the advisor. Courses are described in the University Bulletin.

# **REQUIRED MAJOR COURSES FOR AGRICULTURALSCIENCE, NATURAL RESOURCES**

## **(Plant Science)**

BIOL 240	SLSC 621	NARS 520
NARS 110	SLSC 634	NARS 618
NARS 604	EASC 616	SLSC 633
SLSC 338	HORT 334	

# **CURRICULUM GUIDE FOR AGRICULTURAL, NATURAL RESOURCES**

## **(Plant Science)**

### **FRESHMEN YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
Social Science Elective <sup>4</sup>	3	Social Science Elective <sup>4</sup>	3
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
MATH 111	4	MATH 112	4
AGED 101	<u>1</u>	AGED 102	1
	15	PHED Elective	<u>1</u>
			16

### **SOPHOMORE YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ENGL 201	3
BIOL 240	4	BIOL 160	4
SLSC 338	4	ANSC 211	3
NARS 110	3	ANSC 451	3
PHED Elective	<u>1</u>	SPCH 250	<u>3</u>
	15		16

### **JUNIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 225	3	PHYS 226	3
PHYS 235	1	PHYS 236	1
BIOL 221	4	BIOL 530	4
ECON201	3	AGEC 330	3
SLSC 517	3	NARS 520	1
NARS Elective <sup>1</sup>	<u>3</u>	MATH 224	3
	17	AGEN 116	<u>1</u>
			16

### **SENIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HORT 334	3	EASC 309	3
SLSC 634	4	AGEN 360	3
SLSC 633	4	SLSC 621	4
Elective (EASC, SLSC) <sup>2</sup>	<u>4</u>	Electives	3
	15	NARS 520	<u>1</u>
			14

Total Credit Hours: 124

<sup>1</sup> 3 hrs. NARS 618, NARS 307, NARS 604

<sup>2</sup> 7 hrs. EASC 622, EASC 616

<sup>3</sup> 3 hrs. SLSC 609, SLSC 632

<sup>4</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African American Studies and a three-hour course I Global Studies.

# **REQUIRED MAJOR COURSES FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES**

## **(Soil Science)**

SLSC 338	SLSC 633	NARS 608
SLSC 517	SLSC 634	EASC 309
SLSC 621	NARS 110	EASC 622
SLSC 632	NARS 520	

# **CURRICULUM GUIDE FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES**

## **(Soil Science)**

### **FRESHMAN YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
MATH 111	4	MATH 112	4
AGED 101	1	AGED 102	1
Social Science Elective <sup>1</sup>	<u>3</u>	Social Science Elective <sup>1</sup>	<u>3</u>
	15		15

### **SOPHOMORE YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective	3	Humanities Elective	3
BIOL 240	4	BIOL 160	4
SLSC 338	4	ANSC 211	3
NARS 110	3	EASC 309	3
PHED Elective	<u>2</u>	BIOL 221	<u>4</u>
	16		17

### **JUNIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 225	3	PHYS 226	3
PHYS 235	1	PHYS 236	1
CHEM 221	3	MATH 224	3
CHEM 223	2	ECON 201	3
AGEC 330	3	CHEM 222	3
SPCH 250	<u>3</u>	CHEM 224	<u>2</u>
	15		15

### **SENIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SLSC 634	4	SLSC 517	3
EASC 622	3	SLSC 621	4
SLSC 633	4	SLSC 632	3
NARS 520	1	NARS 608	3
Elective (Major Area) <sup>2</sup>	<u>3</u>	Elective (Major Area) <sup>2</sup>	<u>3</u>
	15		16

Total Credit Hours: 124

<sup>1</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African American Studies and a three-hour course in global studies.

<sup>2</sup> Major Area Electives: NARS 618, NARS 603, NARS 610, EASC 616, SLSC 640



# **REQUIRED MAJOR COURSES FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES**

## **(Environmental Horticulture)**

HORT 302	HORT 527	HORT 611
HORT 303	HORT 600	LDAR 230
HORT 334	HORT 610	

# **CURRICULUM GUIDE FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES**

## **(Environmental Horticulture)**

### **FRESHMAN YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
NARS 110	3	FOLA 105	3
FOLA 104	3	CHEM 100	3
Social Science Elective <sup>1</sup>	<u>3</u>	Social Science Elective <sup>1</sup>	<u>3</u>
	15		15

### **SOPHOMORE YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL Elective	3	ENGL Elective	3
BIOL 100	4	BIOL 240	4
HORT 302	3	HORT 303	3
HORT 334	3	LDAR 230	3
SOCI 100	<u>3</u>	BIOL 201	<u>3</u>
	16		16

### **JUNIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SLSC 338	4	ANSC 214	3
AGEC 240	3	SPCH 250	3
BUAD 422	3	AGEC 330	3
Electives <sup>2</sup>	<u>5</u>	BUAD 425	3
	15	SLSC 517	<u>3</u>
			15

### **SENIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 530	4	BIOL 430	4
HORT 610	3	NARS 608	3
HORT 527	3	HORT 611	3
PHED Elective	2	HORT 600	3
Elective (Major Area) <sup>3</sup>	<u>3</u>	NARS 520	1
	15	Elective (Major Area) <sup>3</sup>	<u>3</u>
			17

**Total Credit Hours: 124**

<sup>1</sup> Social Science Elective: Each student is required to complete a three-hour course in African/African American Studies and a three-hour course in global studies.

<sup>2</sup> Suggested electives: FOLA 320, FOLA 321.

<sup>3</sup> Directed Electives Toward Horticulture Design: LDAR 170, 171, 230, 270, 360, 370, 371, 550.

# THE PROGRAM IN BIOENVIRONMENTAL ENGINEERING

## MISSION STATEMENT

The mission of the Bioenvironmental Engineering program is to provide a quality agricultural and biosystem's engineering education to its students and to satisfy the educational and technical needs of society on local, national and international levels.

## OBJECTIVES

The primary objective of Bioenvironmental Engineering is to provide integrated undergraduate and graduate training in agricultural, biological, and environmental sciences and engineering design. Specific objectives are as follows:

1. Provide students with a basic knowledge of biosystems, bioenergy, and engineering design while providing in-depth training in soil and water engineering
2. Provide training that qualifies students to pursue graduate study and prepares them for practice in private industry and government agencies
3. Encourage students to participate in professional activities, life long learning, teamwork, and to demonstrate ethical conduct in professional practice
4. Assist and guide students as they develop analytical, technical, social, and economic skills that will aid in the attainment of their career goals.

## PROGRAM REQUIREMENTS

The Agricultural and Biosystems Engineering major must complete 128 credit hours, following the approved curriculum. Students majoring in this discipline must maintain a minimum 2.00 cumulative grade point average. See program handbook for additional requirements.

## CAREER OPPORTUNITIES

A degree in this field prepares a student for careers in engineering design, management, research, consulting, governmental agencies, industries, foreign services, sales, teaching, and product development.

## REQUIRED MAJOR COURSES FOR AGRICULTURAL AND BIOENVIRONMENTAL ENGINEERING

AGEN 116	CAAE 362	AGEN 600
AGEN 404	CAAE 364	CAAE 204
AGEN 501	AGEN 330	CAAE 363
AGEN 523	AGEN 440	CAAE 500
AGEN 624	AGEN 502	

## CURRICULUM GUIDE FOR AGRICULTURAL BIOENVIRONMENTAL ENGINEERING

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CAAE 100	2	CAAE 102	2
AGEN 116	2	MATH 132	4
MATH 131	4	HIST Elective	3
Humanities Elective	3	PHYS 241	3
HIST Elective	3	PHYS 251	1
ENGL 100	<u>3</u>	CHEM 106	3
	17	CHEM 116	<u>1</u>
			17

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CAAE 331	3	CAAE 332	3
MATH 231	4	CAAE 334	2
PHYS 242	3	ENGL 331	3
PHYS 252	1	MATH 431	3
CHEM 107	3	CHEM 221	3
CAAE 215	<u>2</u>	CHEM 223	<u>2</u>
	16		16

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CAAE 204	3	CAAE 364	3
CAAE 362	3	INEN 260	2
CAAE 363	1	AGEN 330	4
ELEN 200	3	BIOL 221	4
MEEN 441	3	EASC 309	<u>3</u>
Humanities/Soc. Sci. Elective	<u>3</u>		16
	16		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEN 440	3	AGEN 624	3
AGEN 600	3	AGEN 523	3
AGEN 501	1	AGEN 502	2
AGEN 404	3	AGEN Elective	3
AGEN Elective	3	MATH 224	<u>3</u>
PHED Elective	2		14
CAAE 500	<u>1</u>		
	16		

Total Credit Hours: 128

*Elective AGEN courses include EASC 622, SLSC 632, and Agricultural, Architectural and Civil Engineering courses approved by the faculty advisor.*

## LANDSCAPE ARCHITECTURE

Landscape Architecture is concerned with the quality of land use. It includes the analysis of environmental and social factors and recommendations for the preservation, design, construction, and maintenance of developed land areas. The scope of activities of projects varies from broad, regional landscape planning analysis to detailed site planning.

This curriculum is planned to equip the student to deal with a wide range of environmental problems. A sequence of required courses develops an understanding of landscape design theory and practice and construction techniques. Elective and optional course offerings provide the student an opportunity to concentrate in an area of individual interest.

Multiple courses in several major subject areas are sequential. Completing those courses in sequence as listed is required. A student who earns a "D" in a major course may be required to repeat the course.

## REQUIRED MAJOR COURSE FOR LANDSCAPE ARCHITECTURE

LDAR 170	LDAR 500	LDAR 360
LDAR 230	LDAR 520	LDAR 371
LDAR 271	LDAR 560	LDAR 461
LDAR 303	LDAR 571	LDAR 471
LDAR 370	LDAR 171	LDAR 510
LDAR 460	LDAR 270	LDAR 550
LDAR 470	LDAR 302	LDAR 570

\*A grade of "C" must be made in all of the above requirements.

## CURRICULUM GUIDE FOR LANDSCAPE ARCHITECTURE

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
HIST Elective	3	HIST Elective	3
MATH 101	3	MATH 102	3
LDAR 170	3	LDAR 171	3
LDAR 270	<u>3</u>	LDAR 271	<u>3</u>
	15		15

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL Elective	3	ENGL Elective	3
GEOG 200	3	SOCI Elective	3
PHYS 110	2	LDAR 303	3
PHYS 111	1	LDAR 102	2
LDAR 302	3	LDAR 371	3
LDAR 370	3	PHED Elective	<u>2</u>
LDAR 230	<u>3</u>		16
	18		

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SLSC 338	4	CAAE 204	3
LDAR 460	4	ECON Elective	3
LDAR 470	4	LDAR 471	4
LDAR 550	<u>3</u>	SPCH 250	3
	15	LDAR 461	<u>4</u>
			17

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
LDAR 560	3	LDAR 510	4
LDAR 570	4	LDAR 520	2
Electives	<u>9</u>	LDAR 571	4
	16	Electives	<u>6</u>
			16

Total Credit Hours: 128



## **COURSE DESCRIPTIONS IN AGRICULTURAL BIOENVIRONMENTAL ENGINEERING**

### **AGEN 114. Home and Farm Maintenance** **Credit 3(1-4)**

This course provides instruction in the selection, sharpening, care and correct use of shop tools and equipment; woodworking and simple carpentry; simple electrical repairs; sheet metal work; electric arc and oxyacetylene welding; pipe fitting and simple plumbing repairs. (F)

### **AGEN 116. Geographic Information System in Engineering and Natural Resources** **Credit 2 (0-4)**

This course will introduce the student to a Geographic Information System (GIS) for database analysis using ARC/INFO software. Management and techniques for data input, storage, retrieval, analysis and display of spatial and tabular data would be covered in a computerized laboratory setting. Global Positioning Systems (GPS) will also be introduced. (F)

### **AGEN 204. Surveying, Practices and Principles** **Credit 3(2-2)**

This course is an introduction to plane surveying. Topics include: use of surveying instruments, theory of measurements and sources of error, traverse and curve computations, stadia measurements, differential and profile leveling, topographic mapping and design projects. (S)

### **AGEN 360. General Hydrology** **Credit 3(2-2)**

This course is an introduction to the study of surface and subsurface hydrology. Topics include: hydrologic cycle, rainfall-runoff relationships, precipitation measurements and hydrographs, unit hydrograph analysis, flood routing, planning and design of runoff/detention systems, and computer applications in hydrology. (F)

### **AGEN 330. Engineering Design and Systems Analysis** **Credit 4(2-4)**

System-based thinking will be used to improve the students' integrative view in engineering designs. This concept will be used in designing physical models for real world application. Subject matter discussions will include: soft and hard systems, learning styles, relevant systems, design techniques, optimum designs and evaluation. Prerequisites: MEEN 336 and ECON 300 or 301. (S)

### **AGEN 403. Power and Machinery** **Credit 3(2-2)**

This course deals with tractive units that include field machinery and tractor power. The first part involves the design principles of field machinery, evaluating the functional performance and the efficiency of these machines. The second part deals with the thermal analysis of internal combustion engines. Students will learn to measure and calculate tractive and engine powers. Prerequisites: MEEN 336 and 337. (F)

### **AGEN 404. Structures and Environment** **Credit 3(1-4)**

This course deals with the fundamentals of building construction applied to location, selection materials, foundations, planning farm structures, and environmental considerations, such as temperature, humidity, condensation, and ventilation. Prerequisite: MEEN 336. (F)

### **AGEN 440. Engineering Properties of Biological Materials** **Credit 3(2-2)**

Engineering properties of plant and animal materials will be studied. Specific topics will include: structure and composition of plant and animal materials, elastic and viscoelastic properties, food rheology and thermal properties, aerodynamic and hydrodynamic properties, and electromagnetic properties. These properties will be used to design sound biological and environmental systems. Prerequisites: BIOL 221 and MEEN 336 or consent of instructor. (F)

### **AGEN 501. Engineering Design I** **Credit 1(1-0)**

The major objective of this course is to enhance the design capability of agricultural and biosystems engineering students. During this course each student will identify a design project, define the problem, collect all required resources and databases and outline the work plan. This project should integrate design concepts from previous courses. Prerequisite: Senior standing. (F)

**AGEN 502. Engineering Design II****Credit 2(2-0)**

The major objective of this course is to enhance the design capabilities of agricultural engineering students. This is a continuation of AGEN 501. During this course students will complete the design project selected in AGEN 501.(S)

**AGEN 522. Dairy/Food Engineering****Credit 3(2-2)**

The general engineering principles of solids, fluids, and process equipment will be discussed. Topics include energy, heat, enthalpy, psychometrics, heat and mass transfer, drying and refrigeration of food products. Prerequisite: MEEN 441 or consent of instructor. (F)

**AGEN 523. Biological and Agricultural Energy Systems****Credit 3(2-2)**

This course discusses the production, utilization, and system design for energy in food and agricultural productions. Specific topics include: biogas, biomass, solar energy, energy analysis, conservation and management, including electric power supply and motor control. Energy production through photosynthesis and energy flow in biological systems will also be studied. Prerequisite: MEEN 441. (S)

**AGEN 525. Farm Shop Organization and Management****Credit 3(1-4)**

This is a course designed for prospective and in-service teachers of vocational agriculture; it includes presentation of purpose, plans and equipment of shops, organization of course of study and methods of teaching. Prerequisites: AGEN 114 and 501. (S)

**Advanced Undergraduate and Graduate Courses****AGEN 600. Soil and Water Engineering I****Credit 3(2-2)**

This course is the study of the improvement of soil and water use by evaluating and using present conservation practices and models. Water conveying and retaining structures, and soil conservation, drainage and irrigation systems will be discussed and designed. The course will emphasize sound environmental design practices. Prerequisite: AGEN 360 or consent of the instructor. (F)

**AGEN 619. Instrumentation and Measurement****Credit 3(2-2)**

This course will emphasize quantitative evaluation of some of the well established parameters such as temperature, humidity, fluid flow, pressure, displacement, velocity, acceleration, force, stress, strain, etc. that are widely used in agricultural and biosystems engineering and other engineering disciplines. Prerequisite: MEEN 336 or consent of instructor. (DEMAND)

**AGEN 624. Water Resources Engineering****Credit 3(2-2)**

This course emphasizes the analysis and design of water resources systems. Topics include: water resources planning and development, hydraulic structures, introduction to aquifer analysis and contamination, well development, pump evaluation and selection, water quality and management, water laws, and detention and retention pond, wastewater management and remediation. Prerequisite: AGEN 360 or consent of instructor. (S)

**EARTH AND ENVIRONMENTAL SCIENCE****EASC 201. The Earth—Man's Environment****Credit 3(3-0)**

This course is a study of the earth's system as related to atmosphere, biosphere, hydrosphere and lithosphere. The interrelationship of humans with the earth's environment as revealed in the modification of natural processes will also be examined. (F;S;SS)

**EASC 309. Elements of Physical Geology****Credit 3(2-2)**

This course examines the relation of geological principles in the development of a balanced concept of the earth and the earth's history; rock and mineral identification, utilization of geological and topographic maps, geological processes, resource conservation, urban and environmental problems. Prerequisite: CHEM 101 or consent of instructor. (S)

**EASC 330. Elements of Weather and Climate** **Credit 3(2-2)**

This course examines the fundamental elements of weather conditions as revealed in world patterns of climate types. It surveys the types of land forms and makes applications to problems in engineering, military science and in planning for agricultural, urban and regional development projects. Prerequisite: Consent of instructor. (F)

**EASC 408. Field Work in Earth Science** **Credit 3(1-4)**

Methods of geologic map construction using aerial photographic maps, Brunton Compass, etc., for stratigraphic measurements; interpretation of remotely sensed data will be studied. (SS)

**EASC 433. Fundamentals of Mineralogy** **Credit 2(1-2)**

This course provides systematic study of mineral groups, their occurrence, formation, economic importance, identification by x-ray and other techniques. Prerequisite: EASC 309. (F)

**Advanced Undergraduate and Graduate**

**EASC 616. Environmental Planning and Natural Resource Conservation** **Credit 3(2-2)**

Problems of uncontrolled use of natural resources, increased urbanization, unplanned growth and general deterioration of the man-made and natural environments will be examined. The basic principles of environmental planning and natural resources management as well as natural resource conservation will also be studied. (F)

**EASC 622. Environmental Sanitation and Waste Management** **Credit 3(2-2)**

This course is the study of traditional and innovative patterns as well as problems of managing with handling waste products of urban and rural environments, their renovation and reclamation. (F)

**EASC 624. Earth Science, Geomorphology** **Credit 3(2-2)**

This course examines various land forms and their evolution - the naturally evolved surface features of the Earth's crust and the processes responsible for their evaluation, their relation to man's activities and as the foundation for understanding the environment. (F)

**EASC 625. Earth Resources** **Credit 3(2-2)**

Conservation, management and use of renewable and nonrenewable resources and their impact on the social and economic quality of our environment. (SS)

**EASC 644. Problem Solving in Earth Science** **Credit 3(3-0)**

Independent field and/or laboratory research in earth and environmental science for advanced students is/or required. (S)

**EASC 666. Earth System Science** **Credit 3(3-0)**

This course is the study of the earth as a "system" with emphasis on the atmosphere, biosphere, hydrosphere, and lithosphere interactions as related to global change and human activities. (F)

**EASC 699. Environmental Problems** **Credit 3(3-0)**

This course provides multidisciplinary examination of environmental problems and application of appropriate techniques of analysis to selected problems. Team taught by environmental faculty. (S)

**ENVIRONMENTAL HORTICULTURE**

**HORT 302/LDAR 302. Plant Materials I (Formerly LDAR 202)** **Credit 3(2-2)**

This course is the study of plant materials as used in landscape design. Emphasis is placed on major categories of herbaceous plants and woody plants as they pertain to landscape usage. Identification techniques will be introduced and used. (F)

**HORT 303/LDAR 303. Plant Materials II (Formerly LDAR 203)** **Credit 3(2-2)**

The course is a continuation of LDAR 202 with different plant species. (S)



**HORT 334. Plant Propagation****Credit 3(2-2)**

This course is the study of the types, construction, and management of propagation structures; and the fundamental principles of propagation by seed, cuttage, budding, grafting, and layerage. Prerequisite: NARS 110. (F)

**HORT 527. Basic Floral Design****Credit 3(1-4)**

The essentials of flower arrangement and plant decoration for the home, office, hospital, school and church are studied. Special attention given to design principles, such as balance, scale, harmony, color, and line movement. (DEMAND)

**Advanced Undergraduate and Graduate****HORT 600. Advanced Plant Propagation****Credit 4(1-4)**

Advanced principles of plant propagation by plant cell and tissue biotechniques will be studied. (F)

**HORT 610. Commercial Greenhouse Management****Credit 3(2-2)**

The culture of floriculture crops in the greenhouse out-of-doors with emphasis on cut flowers and potted plants will be studied. Special attention is given to seasonal production as it relates to soils, fertilization and environmental factors. (DEMAND)

**HORT 611. Commercial Greenhouse Production II****Credit 3(2-2)**

The culture of floriculture crops in the greenhouse with emphasis on seasonal production, marketing, insect and disease controls and plant growing structures will be studied. Prerequisites: HORT 334 and 610. (DEMAND)

**HORT 612. Plant Materials and Landscape Maintenance****Credit 3(2-2)**

This course is the study of the identification, merits, adaptability, and maintenance of shrubs, trees, and vines used in landscape planting trees, shrubs, bulbs, and perennials. (DEMAND)

**HORT 613. Plant Materials and Planning Design****Credit 3(2-2)**

This course is a continuation of HORT 612 with added emphasis on plant combinations and use of plant as design elements. (DEMAND)

**LANDSCAPE ARCHITECTURE****LDAR 102. Environmental Design Ethics****Credit 2(2-0)**

This course is designed to emphasize issues, values, and ethics in landscape architecture. Current concerns and issues involving the environment, design and social factors will be explored. A variety of ideologies within the practice of landscape architecture and their niches within the profession will be examined. (S)

**LDAR 170. Landscape Architectural Orientation I (Formerly LDAR 140)****Credit 3(0-6)**

Students enrolled in this studio course will explore the field of landscape architecture and the various visual communication techniques. Students will be exposed to traditional and digital visual and graphic techniques necessary for the communication of ideas. (F)

**LDAR 171. Landscape Architectural Orientation II****(Formerly LDAR 141)****Credit 3(0-6)**

This studio course is designed to explore further issues of visual communication. Both traditional and digital visual media will be used to investigate more technical aspects of communication; two and three dimensional aspects of form and space creation will be explored. (S)

**LDAR 302/HORT 302. Plant Materials I (Formerly LDAR 202)****Credit 3(1-4)**

This course will concentrate on the study of plant materials as used in landscape design. Emphasis is placed on major categories of herbaceous plants and woody plants as they pertain to landscape usage. Identification techniques will be introduced and used. (F)



**LDAR 303/HORT 303. Plant Materials II (Formerly LDAR 203) Credit 3(1-4)**

This course is a continuation of LDAR 302. Different plant species will be the focus of this course. Prerequisite: LDAR 302. (S)

**LDAR 270. History of Landscape Architecture I (Formerly LDAR 210) Credit 3(3-0)**

This history course is a study of the development of landscape architecture from antiquity to modern times, with emphasis on its relationships to allied arts and professions. Prerequisite: University History Requirement. (F)

**LDAR 271. History of Landscape Architecture II (Formerly LDAR 211) Credit 3(3-0)**

This course is a study of the development of landscape design during the modern and postmodern eras. Topics will include the English Landscape School, the City Beautiful Movement, the Country Place Era and the International School. Prerequisite: LDAR 270. (S)

**LDAR 230. Environmental Ecology Credit 3(3-0)**

Basic concepts of ecology, ecosystem structure and function will be explored; energy flow and material recycling emphasized. Field trips are required. Prerequisite: LDAR 170. (S)

**LDAR 370. Basic Landscape Design I (Formerly LDAR 240) Credit 3(0-6)**

Students in this studio course will explore basic concept development and principles and elements of design. The course will give students a greater understanding of space through analysis of forms, proportions, and scale. Students will investigate design theory by proposing solutions. Prerequisite: LDAR 170. (F)

**LDAR 371. Basic Landscape Design II (Formerly LDAR 241) Credit 3(0-6)**

This studio course is designed to explore further issues of design. Course material will emphasize ideologies about scales, context, and concept development. Projects will explore creative solutions to "real" world constraints (i.e. zoning regulations, economic, environmental, social, political, etc.). The cyclic nature of the design process and its layers will also be emphasized. Prerequisite: LDAR 370. (S)

**LDAR 360. Landscape Construction Materials (Formerly LDAR 130) Credit 3(2-1)**

This course will introduce students to various materials used in landscape construction projects. The nature, structure and/or composition of the material, its typical application in the landscape and construction techniques will be discussed. Emphasis will be placed on the use of materials in the landscape and the development of drawn construction details during the lab period. (S)

**LDAR 460. Landscape Architectural Construction (Formerly LDAR 330) Credit 4(0-8)**

This studio course will focus on exercises and projects in site engineering. Prerequisites: MATH 102, PHYS 110 and 111. Corequisite: LDAR 470. (F)

**LDAR 461. Landscape Architecture Materials and Equipment (Formerly LDAR 331) Credit 4(0-8)**

This studio course will focus on lectures, exercises and projects dealing with landscape equipment, and design methods. Prerequisites: MATH 102, PHYS 110, and 111. Corequisite: LDAR 471. (S)

**LDAR 470. Intermediate Landscape Architectural Design I (Formerly LDAR 340) Credit 4(0-8)**

This is a studio course for students to develop design solutions to problems involving private, quasi-public, and public spaces with emphasis on the design process. The student will develop programs, site analysis, concept, and presentation drawings. Prerequisites: LDAR 171, 230 and 371. Corequisite: LDAR 460. (F)

**LDAR 471. Intermediate Landscape Architectural Design II**  
**(Formerly LDAR 341)**

**Credit 4(0-8)**

This studio course is a continuation of LDAR 470 addressing more complex design issues. Prerequisite: LDAR 470. (S)

**LDAR 500. Special Problems in Landscape Architecture**

**Credit 3(2-2)**

This is a course for landscape architecture students to work on independent study projects. Prerequisite: Consent of the instructor and Program Director. (F)

**LDAR 510. Professional Practice (Formerly LDAR 410)**

**Credit 4(4-0)**

This course is a study of the professional practice of landscape architecture, including professional ethics and registration laws; the preparation of proposals and contract documents; office administration; job supervision, and relationships with clients and customers. Prerequisites: LDAR 461, 570, and 560. Corequisites: LDAR 571 and 520. (S)

**LDAR 520. Seminar in Landscape Architecture (Formerly LDAR 420)**

**Credit 2(2-0)**

Individual research, group discussions, and lectures on contemporary issues relating to the practice of landscape architecture are the focus of this seminar. Prerequisite: LDAR 570. Corequisites: LDAR 571 and 510. (S)

**LDAR 550. Planting Design (Formerly LDAR 400)**

**Credit 3(0-6)**

This studio course will study the fundamentals of design as applied to aesthetic and functional arrangements. Problems will include preparation of planting plans, cost estimates and technical specifications. Prerequisites: LDAR 302 and 303. Corequisites: LDAR 460 and 470. (F)

**LDAR 560. Advanced Landscape Architectural Construction Documents**  
**(Formerly LDAR 430)**

**Credit 3(0-6)**

This studio course will serve as a capstone to Landscape Architectural Construction 330 and 331 with emphasis on understanding and preparing complete sets of construction documents for landscape architecture projects. Prerequisites: LDAR 460 and 461. (F)

**LDAR 570. Advanced Landscape Architecture I (Formerly LDAR 440)**

**Credit 4(0-8)**

This studio course is an in-depth group study of a comprehensive landscape architecture management, planning, and design problem while considering the research, programming, site analysis, conceptual studies, preliminary and master plan, design guidelines, and presentations of recommendations. Prerequisites: LDAR 461, 471, and 550. (S)

**LDAR 571. Advanced Landscape Architectural Design II**  
**(Formerly LDAR 441)**

**Credit 4(0-8)**

This studio course focuses on an approved design problem requiring individual work, which will serve as a comprehensive examination. Preparation and presentation are to include a written and graphic problem statement, analysis, and detailed plans, or other activities approved by instructor. Prerequisite: LDAR 570. Corequisites: LDAR 510 and 520. (S)

**NATURAL RESOURCES**

**NARS 110. Natural Resources**

**Credit 3(2-2)**

This course is an introduction to the basic principles underlying the production of economic crops. A brief introduction to drug and medical plants will also be included. Prerequisite: BIOL 140. (F;S)

**NARS 305. Principles of Plant Breeding**

**Credit 3(2-2)**

This is an introductory course with emphasis placed on basic principles of plant improvement through genetics; it is required of all Plant Science majors. Prerequisite: BIOL 140 or ANSC 214. (DEMAND)

**NARS 307. Forage Crops****Credit 3(2-2)**

This course is the study of grasses, legumes and other plants and their uses as hay pasture, silage and special purposes of forages, identification of plants and seeds and study of quality in hay, silage and pasture population. Prerequisite: NARS 110. (DEMAND)

**NARS 520. Seminar in Plant Science and Technology****Credit 1(1-0)**

This course examines current problems in Plant Science and Technology. Designed especially for unifying the three major areas of the Department by involving the staff with junior and senior students. (F)

**Advanced Undergraduate and Graduate****NARS 603. Agricultural Chemicals****Credit 3(2-2)**

This course is a study of the important chemical pesticides and growth regulators used in the production of economic plants. Prerequisites: CHEM 102 and NARS 300. (DEMAND)

**NARS 604. Crop Ecology****Credit 3(3-0)**

This course is the study of the physical environment and its influence on crops and geographical distribution of crops. (DEMAND)

**NARS 605. Breeding of Crop Plants****Credit 3(2-2)**

This course examines the following: the significance of crop improvements in the maintenance of crop as well as the yields; application of genetic principles and techniques used in the improvement of crops; and the place of seed certification in the maintenance of varietal purity. (DEMAND)

**NARS 607. Research Design and Analysis****Credit 3(2-2)**

Experimental designs, methods and techniques of experimentation, application of experimental design to plant and animal research; and interpretation of experimental data will be included in this course. Prerequisites: AGE 644 and MATH 224. (F)

**NARS 608. Special Problems in Natural Resources****Credit 3(3-0)**

The courses designed for students who desire to study special problems in Natural Resources; plant, soil, and environment. (F;S)

**NARS 610. Applied Spatial Statistics and GIS****Credit 3(2-2)**

This course introduces spatial statistical analysis techniques, which provide the students with the opportunity to conduct exploratory spatial data analysis with ArcView GIS, S-PLUS/ SpatialStats and the SAS/GIS Software. The focus of this course is on effective application of spatial data analysis in GIS environment; MATH224 and GIS software or consent of instructor. (DEMAND)

**NARS 618. General Forestry****Credit 3(2-2)**

This course is the study of the history, classification, culture, and utilization of native trees, with special emphasis on their importance as a conservation resource, the making of national forestry policy, and the ecological impact of trees on environmental quality. Prerequisite: BIOL 140. (SS)

**AGRI 604. Experimental Methods in Research****Credit 3(3-0)**

Experimental design, methods and techniques of experimentation, application of experimental design to plant, animal and food research; and interpretation of experimental data will be included in the course. Prerequisite: MATH 224. (F)



## SOIL SCIENCE

### **SLSC-338. Fundamentals of Soil Science**

**Credit 4(3-2)**

The fundamental nature and properties of soils and introductory treatment of soil genesis, morphology, and classification and land use will be covered. (F)

### **SLSC 517. Soil Fertility**

**Credit 3(3-0)**

This course examines that following: the general principles of soil fertility; influence of chemical, physical and microbiological properties of soils on crop production; application of fertility principles in cropping programs; and limited treatment of impact of agricultural pollutants on the environment. Prerequisite: SLSC 338, CHEM 101 or consent of instructor. (DEMAND)

### **Advanced Undergraduate and Graduate**

### **SLSC 621. Soil Microbiology**

**Credit 4(2-4)**

A study of soil micro and macro organisms and their role in elemental cycles, environmental pollution remediation and crop yields. Also, deals with the rhizosphere ecology and processes. Organic matter accumulation and carbon sequestration in soils.

### **SLSC 632. Soil Physics**

**Credit 4(2-4)**

This course is a study of fundamental physical principles and laws which govern the behavior of soils. Physical constitution soil water, and soil air and the relationship of soil physical conditions to plant growth and engineering usage will also be studied. Prerequisites: SLSC 338, CHEM 102, and MATH 113, and consent of instructor. Spring terms of even numbered years. (S)

### **SLSC 633. Soil Genesis, Classification and Land Use**

**Credit 4(2-4)**

Factors and processes of soil formation, grouping of soils based on their properties, soil mapping, soil interpretations for various uses and discussion of new concepts in soil taxonomy will be studied. Prerequisite: SLSC 338 or consent of instructor. (F)

### **SLSC 634. Soil Environmental Chemistry**

**Credit 4(3-2)**

This course is a study of the chemical properties of soil environment including interactions of solid, liquid and gaseous phases. Discussion will also include ion and pollutant interactions with soil, their retention, potential movement and the environmental impact. Additional discussion will include oxidation and reduction, soil acidity and alkalinity and their impact on waste management, resource utilization and the environment. (S)



## DIRECTORY OF FACULTY

- Keith Baldwin** ..... **Cooperative Extension Faculty**  
B.S., M.Ed., University of California, Ph.D., North Carolina State University
- Peggy Fersner** ..... **Adjunct Assistant Professor**  
B.S., Virginia Polytechnic Institute and State University; M.S., Clemson University (P.E.)
- Godfrey A. Gayle** ..... **Professor**  
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University
- Marihelen Glass** ..... **Professor**  
B.S., Texas Tech University; M.S., Ph.D., Texas A&M University
- Perry Howard** ..... **Associate Professor**  
B.L.A., Louisiana State University; M.L.A., Harvard University
- Omoanghe S. Isikhuemhen** ..... **Adjunct Assistant Professor**  
B. S., M.S. University of Benn, Ph.D. Institute of Microbiology, MS CR, Prague
- Carl Niedzela** ..... **Adjunct Assistant Professor**  
B.S., Pennsylvania State University; M.S., West Virginia University; Ph.D., North Carolina State University
- Richard Phillips** ..... **Adjunct Associate Professor**  
B.S., Iowa State University, M.S., North Carolina State University (P.E.)
- Charles W. Raczkowski** ..... **Adjunct Associate Professor**  
B.S., M.S.; Kansas State University; Ph.D., North Carolina State University
- G. Bhaskar Reddy** ..... **Chairman and Professor**  
B.S., M.S., A.P., Agricultural University, India; Ph.D., University of Georgia
- M. Raj Reddy** ..... **Professor**  
B.S., Osmania University, M.S., A.P., Agricultural University, India; Ph.D., University of Georgia
- Manuel R. Reyes** ..... **Associate Professor**  
M.S., University of the Philippines at Los Banos; M.Phil., Cranfield Institute of Technology, England; Ph.D., Louisiana State University
- John F. Robinson** ..... **Professor**  
Sr., A.A., Jr. College of Albany, B.L.A., Louisiana State University, M.L.A., Harvard University
- Abolghasem Shahbazi** ..... **Professor**  
B.S., University of Tabriz; M.S., University of California at Davis, Ph.D., Pennsylvania State University (F.E.)
- Vestal Shirley** ..... **Laboratory Manager**  
B.S., Mid Western University; Ph.D., Louisiana State University-Baton Rouge
- Godfrey A. Uzochukwu** ..... **Professor**  
B.S., M.S., Oklahoma State University; Ph.D., University of Nebraska
- Gouchen Yang** ..... **Adjunct Professor**  
B.S., Jilin Agricultural University, M.S., Ph.D., University of Nebraska-Lincoln

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## **COLLEGE OF ARTS AND SCIENCES**

<http://www.ncat.edu/artsnsoci/>

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**Caesar Jackson, Interim Dean**

**Nita Dewberry, Associate Dean for Curriculum and Student Affairs**

**Claude Barnes, Associate Dean for Research and Graduate Studies**

### **OBJECTIVES**

The College of Arts and Sciences at North Carolina Agricultural and Technical State University introduces the student to the world of higher education and its many fields of human interests. The College provides opportunities for the acquisition of knowledge, skills, attitudes and behavioral patterns that promote excellence and competence. Our primary aim is to provide students with a global educational experience which prepares them to perform in a variety of dynamic leadership and employment situations.

Through its formal curriculum and program of study in the arts and humanities, the social and behavioral sciences, as well as the natural and physical sciences, the College intends to achieve the following objectives:

1. to provide courses in general education for all students at the University.
2. to provide courses of instruction and service-learning experiences that prepare students for professional or self-employment.
3. to provide opportunities and experiences for the student to acquire analytical and critical thinking skills.
4. to provide training in effective communication.
5. to stimulate and encourage individual creativity and personal development through research and related activities.
6. to foster and inspire creativity, self-discipline, and objective thinking among our students.
7. to provide the undergraduate academic foundation for successful graduate and professional education.

### **DEGREES OFFERED**

The College of Arts and Sciences is comprised of thirteen academic departments and programs, thirty-three undergraduate degree programs leading to the Bachelor of Arts, the Bachelor of Science, the Bachelor of Fine Arts, and the Bachelor of Social Work. The Bachelor of Arts degree is offered with major programs of study in English; History; Music (General) and Music (Performance); Political Science; Psychology; Romance Languages (French and Spanish); Sociology; Speech; and Visual Arts. The Bachelor of Science degree is offered with major programs of study in Art, Biology, Chemistry, Criminal Justice; English, History, Math, Music, Physics and Romance Languages (French and Spanish). The Bachelor of Fine Arts degree is offered in Professional Theatre and the Bachelor of Social Work degree is offered in Social Work. Many degree programs may be pursued jointly with professional education courses offered in the School of Education. Graduates of these programs qualify for certification to teach in the secondary schools. In addition, the Mathematics and Physics departments have degree programs in association with the School of Engineering in Applied

Mathematics and Engineering Physics. An additional degree program in Liberal Studies is in the planning process.

### **DEGREE REQUIREMENTS**

To attain the baccalaureate degree in the College of Arts and Sciences, a student must satisfactorily complete the requirements of his/her major field, the general education courses, and a sufficient number of electives to total at least 124 credits. The minimum scholastic average required for graduation in any department degree program is a 2.0 in all major courses, in addition to the overall grade point average requirement of 2.0.

### **ACCREDITATION**

All of the Programs in the College of Arts and Sciences that have accrediting organizations have been accredited. They are as follows:

- The Chemistry Program is accredited by the American Chemical Society (ACS).
- The Music Program is accredited by the National Association of Schools of Music (NASM).
- The Social Work undergraduate program is approved by the Council on Social Work Education (CSWE).
- The Bachelor of Fine Arts in Professional Theater is accredited by the National Association of Schools of Theatre (NAST).
- The Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and the North Carolina State Department of Public Instruction (NCATE/ NCDPI).

### **CAREER OPPORTUNITIES**

The curricula of the College prepares students for careers in teaching, research, social work, journalism, radio and television, the creative arts, industry, government and self-employment. Within the professional curricula, students may pursue studies which lead to careers in law, medicine, dentistry, librarianship, teaching and the ministry.

### **SEMESTER LOAD LIMIT**

The normal schedule is 15-16 semester hours per semester. No student may register for more than 18 semester hours per semester without permission of the Dean.

### **ACADEMIC ADVISEMENT**

To assist students in meeting graduation requirements, a system of student advisement is provided in all departments. Academic advising is essential for assuring students that the programs of study they are pursuing include the requirements of their particular departments and desired degrees. It also assists in helping students make maximum use of the learning opportunities in the University and in helping them with academic problems.

### **ADMISSION REQUIREMENTS**

Admission requirements for the College of Arts and Sciences are the same as those for the University. Requirements for graduation vary from department to department; therefore, students must be certain to satisfy departmental requirements. Students are responsible for meeting all academic requirements for graduation.



## GENERAL EDUCATION REQUIREMENTS

The purpose of general education in the College of Arts and Sciences is to prepare students to enter the specialized programs of their university education, and to provide essential elements of a higher education not necessarily included in the students' specialties. Accordingly, the general education curriculum of the College of Arts and Sciences is designed to do the following:

1. Insure that students acquire basic skills in communication (reading, writing, speaking, and listening) and mathematics;
2. Develop in students a capacity for sustained analysis that is critical, reasoned, informed, independent, and to acquaint students with the ethical, political, and cultural issues concerning which value judgments must be made and which responsibilities must be assumed;
3. Acquaint students with the use of the scientific method in both the natural and the social sciences and provide students with facts, concepts, and theories concerning the natural and social environments;
4. Impart to students the ideas, values, and events that balance their cultural tradition, familiarize them with the comparable experiences of other cultures, and deepen students' sensitivities through experiencing works of the imagination;
5. Create in students a positive attitude toward their fields of endeavor and encourage them to improve those skills which will be useful for further study and competency in their areas of specialization; and
6. Acquaint students with good health practices and creative uses of leisure time, and strengthen the students' self-images to enable them to deal constructively with changes in a technological and computerized world while maintaining high moral standards and aesthetic values.
7. To assist students in developing high moral standards and aesthetic values.

To achieve the above purposes, the College has developed a set of general requirements from which students must choose sixteen courses in five fields. The general education requirements are listed below:

- I. English Composition (2 courses required)
- II. Science (Natural and Physical, and Mathematics), (2 courses required) - Mathematics, Chemistry, Biology, and Physics
- III. Foreign Languages (2 courses required) - Spanish, French, German, Russian, Japanese, and Portuguese
- IV. Social Science (Social and Behavioral) (4 courses required) - Anthropology, Economics, Geography, History, Political Science and Sociology
- V. Humanities (4 courses required) - Art, English, Humanities, Music, Philosophy and Speech

Certain courses require specific prerequisites and certain majors require specific courses; therefore, students should be knowledgeable of departmental requirements when planning their courses of study.

Students planning to enter teaching fields should also be knowledgeable about the semester hour requirements.

Students should also be aware that satisfactory advanced placement scores and/or comparable experiential evidence may be used to satisfy some of the requirements for a baccalaureate degree. Students should consult the chairperson of their respective departments for information.



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## Department of Biology

<http://www.ncat.edu/~biology/>

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**David W. Aldridge, Interim Chairperson**

### OBJECTIVES

The objectives of the Biology Department are as follows:

1. to train professional biologists in the nature of scientific investigation, the principles of biology, and the value of scientific enterprise.
2. to prepare students for career opportunities in research, industry, and government.
3. to prepare students for graduate study in the biological sciences.
4. to prepare students for admission to professional schools (i.e. medical, dental, and veterinary school).
5. to prepare students to teach biology at the secondary school level.
6. to provide courses in biology that fulfill the general education core requirements of the University.
7. to provide cognate courses for students majoring in or receiving certification in other fields including, but not limited to, agricultural sciences, home economics, nursing, horticulture, and physical education.
8. to act as a resource to the University and community through cooperative programs, workshops, seminars, course offerings, and public service.
9. to conduct research and scholarly activity in the areas of biology, biotechnology, computational biology, and biology education.
10. to provide students with experience in the applications of computers in biological research.

### DEGREES OFFERED

Biology – Bachelor of Science

Biology, Secondary Education – Bachelor of Science

Biology – Master of Science\*

Biology, Secondary Education – Master of Science\*

*\* See the Graduate School Bulletin*

The curricula of the two undergraduate programs are similarly structured but are geared to their specific goals. Departmental advisors assist all biology students for the pre-professional and secondary education sequences.

Students interested in pursuing either undergraduate degree program in the Department of Biology are advised that rigorous high school preparation is important to success. The Department strongly recommends that a prospective student's preparation include 5 units of high school science (including units in biology, chemistry and physics) and at least 1 unit of mathematics beyond Algebra II.

### GENERAL ADMISSION REQUIREMENTS

The admission of students to the degree programs in the Department of Biology is based upon the general admission requirements of the University.

## DEPARTMENTAL REQUIREMENTS

Biology (Pre-Professional) – Students are required to complete a minimum of 124 hours for graduation. In the professional sequence, the student is required to complete a minimum of 46 semester hours of biology and 41 semester hours of supporting science courses. The remaining courses satisfy the University's General Education requirements.

Biology, Secondary Education – Students following the teacher education sequence are required to complete a minimum of 126 semester hours. Included in these 126 hours are a minimum of 34 semester hours of biology and 62 semester hours of supporting courses. The remaining courses satisfy the University's General Education and School of Education requirements.

## ENRICHMENT PROGRAMS

Several enrichment programs and activities are available to students in the department, which are designed to increase the knowledge and competitiveness of biology majors. They include:

1. *Departmental Seminars* (including the Artis P. Graves Lecture Series, the MARC Honors Colloquium, and monthly departmental seminars). All students are encouraged to attend seminars presented by research scientists from industry; medical institutions, research laboratories and universities.
2. *Annual Life and Physical Sciences Research Symposium*. The Department of Biology sponsors an annual research symposium to provide a forum for students and faculty members to present their research in poster and oral formats. The symposium is designed to increase student awareness of research opportunities and to facilitate interactions between local students and faculty researchers with prominent scientists from other institutions including government, industry, and academia.
3. *Health Careers Opportunity Program*. This program is a collaborative effort with the University of North Carolina at Chapel Hill School of Medicine designed to increase the number of disadvantaged students entering the health professions. It focuses on academic skills improvement, counseling, and mentoring. Consult the health career advisor.
4. *Minority Access to Research Careers Undergraduate Student Training in Academic Research Program* (MARC U\* STAR). This program allows students with GPAs of 3.00 or above the opportunity to gain research experience during the academic year as well as participate in research internships during the summer.
5. *Student Clubs*. Biology majors are strongly encouraged to participate in the Biology Club. Activities of the Biology Club include field trips, seminars, community service, promotion of careers in health care and preparation for national entrance examinations to professional schools. Students with GPAs of 3.00 or above may be selected for membership in the following national scientific honor societies: Tau Phi Chapter of Beta Beta Beta Biological Honor Society and Beta Kappa Chi National Scientific Honor Society.
6. *Biotechnology Certification*. This is a subproject of the A&T Interdisciplinary Biotechnology certification Program. Students are encouraged to seek intra- and extramural internships that provide hands-on exposure to laboratory techniques unique to biotechnology that would qualify them for research positions in research related to biotechnology.

## ACCREDITATION

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education (via the National Science Teachers Association) and approved by the North Carolina State Department of Public Instruction.

## ENRICHMENT FACILITIES

1. *Herbarium* (NCATG). A collection of approximately 6,000 specimens, several dozen of which were collected in the 1800's. NCATG is registered internationally.
2. *Computer Room*. This satellite computer center, located in Barnes Hall, has 16-networked computers available for students. The room also houses printers and scanners for specific student needs.
3. *Research Laboratories*. The Department of Biology houses several state-of-the art research laboratories to support faculty and student research in molecular biology, biotechnology, microbiology, virology, ecology, and other biological sciences. In support of research, the Department has a suite with transmission and scanning electron microscopes, an adjacent dark room, a cell tissue culture laboratory, plant growth chambers, a cold room and greenhouse.
4. *Lecture Facilities*. The teaching facilities in the Department include a seminar room, auditorium, and a video-conferencing center equipped with state-of-the art computer and audiovisual technology.

## RESEARCH & EXTRAMURAL FUNDING

As is the standard in quality programs nationally, the department receives training and research support from Federal, State and private funding agencies, to support its educational and research missions. Research areas in the department include:

- Biotechnology
- Cell & Molecular Biology
- Endocrinology/Biochemistry
- Developmental Biology
- Electron Microscopy
- Bacteriology/Biochemistry
- Virology/Immunology
- Environmental Biology/Ecology
- Experimental Plant Taxonomy/Floristics
- Plant Physiology

## CAREER OPPORTUNITIES

Due to the depth of required courses in biology and the breadth of support courses in the quantitative sciences, languages, humanities, the arts and others, Biology majors qualify for employment in many fields. Highly motivated graduates in biology compete successfully for entry into graduate and professional schools. Research careers in government and industry as well as jobs in technical and pharmaceutical sales, biotechnology, environmental science, and teacher education are some of the career opportunities available to majors in biology.

## REQUIRED MAJOR COURSES FOR BIOLOGY

BIOL 101	BIOL 260	BIOL 466
BIOL 160	BIOL 401	BIOL 468
BIOL 221	BIOL 410	BIOL 469
BIOL 240	BIOL 462	BIOL 561

## CURRICULUM GUIDE FOR BIOLOGY

### (Pre-Professional Sequence)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 101	4	BIOL 160	4
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
ENGL 100	3	ENGL 101	3
MATH 131 <sup>1</sup>	4	MATH 132	4
PHED 101 <sup>2</sup>	<u>1</u>	PHED 102 <sup>2</sup>	<u>1</u>
	16		16

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 240	4	BIOL 221	4
CHEM 221	3	BIOL 260	4
CHEM 223	2	CHEM 222	3
FOLA 100, 102, or 104 <sup>3</sup>	3	CHEM 224	2
MATH 231, 224 or 431	<u>4-3</u>	FOLA 101, 103, or 105 <sup>3</sup>	<u>3</u>
	16-15		16

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 401	4	BIOL 462	4
BIOL 410	3	ENGL 260 or 331	3
BIOL 466	3	PHYS 242	3
PHYS 241	3	PHYS 252	1
PHYS 251	1	SPCH 250	3
Free Elective	<u>3</u>	Free Elective	<u>3</u>
	17		17

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 468	1	BIOL 469	1
BIOL Elective <sup>4</sup>	3	BIOL 561	4
BIOL Elective <sup>4</sup>	3	CHEM 651	3
Humanities Elective <sup>5</sup>	3	Humanities Elective <sup>4</sup>	3
Social Science Elective <sup>6</sup>	<u>3</u>	Social Science Elective <sup>4</sup>	<u>3</u>
	13		14

Total Credit Hours: 124-125

<sup>1</sup> Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

<sup>2</sup> Substitute courses are accepted for PHED 101 and PHED 102 upon approval of major advisor.

<sup>3</sup> Two consecutive courses in the same foreign language.

<sup>4</sup> Courses taken for Biology electives must be numbered 400 or above.

<sup>5</sup> Courses which may be taken as Humanities electives: ENGL 200, 201, 333, 650, 652, 654, 656, 658, 660; FOLA 417; MUSI 220 or 221; THEA 630

<sup>6</sup> Courses which may be taken as Social Science electives: HIST 100, 101, 201, 202, 215, 216, 310, 311, 328, 412, 416, 616; POLI 220 or 445; SOWK 314; SPCH 302; ECON 615; CUIN 627



# CURRICULUM GUIDE FOR BIOLOGY

## (Secondary Education Sequence)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 101	4	BIOL 240	4
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
ENGL 100	3	ENGL 101	3
MATH 131 <sup>1</sup>	4	MATH 132	<u>4</u>
PHED 101 <sup>2</sup>	<u>1</u>		15
	16		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 260	4	BIOL 221	4
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 224	2
CUIN 102	2	CUIN 301	2
PHED 200	2	Humanities Elective <sup>3</sup>	3
Social Science Elective <sup>4</sup>	<u>3</u>	Social Science Elective <sup>3</sup>	<u>3</u>
	16		17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 466	3	BIOL 462	4
BIOL Elective <sup>5</sup>	3	FOLA 101, 103, or 105 <sup>6</sup>	3
FOLA 100, 102, or 104 <sup>6</sup>	3	PHYS 226	3
PHYS 225	3	PHYS 236	1
PHYS 235	1	BIOL 561	4
SPCH 250	<u>3</u>	Humanities Elective <sup>3</sup>	<u>3</u>
	16		18

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 410	3	CUIN 500	3
BIOL 468	1	CUIN 535	3
PSYC 320	3	CUIN 560	<u>6</u>
CUIN 400	3		12
CUIN 436	3		
CUIN 624	<u>3</u>		
	16		

Total Credit Hours: 126

<sup>1</sup> Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

<sup>2</sup> Substitute courses are accepted for PHED 101 and PHED 102 upon approval of major advisor.

<sup>3</sup> Courses which may be taken as Humanities electives: ENGL 200, 201, 333, 650, 652, 654, 656, 658, 660; FOLA 417; MUSI 220 or 221; THEA 630

<sup>4</sup> Courses which may be taken as Social Science electives: HIST 100, 101, 201, 202, 215, 216, 310, 311, 328, 412, 416, 616; POLI 220 or 445; SOWK 314; SPCH 302; ECON 615; CUIN 627

<sup>5</sup> Courses taken for Biology electives must be numbered 400 or above.

<sup>6</sup> Two consecutive courses in the same foreign language.

## COURSE DESCRIPTIONS IN BIOLOGY

### Undergraduate

#### **BIOL 100. Biological Science**

**Credit 4(3-2)**

This is a general education course that stresses the objectives presented under the general education program of the University. This course stresses central concepts in biology including; basic chemical and physical phenomena, biochemistry, cell form and function, genetics, evolution, and multicellular organization. The laboratory will examine major biological concepts. Biological Science is not open to Biology majors. (F;S;SS)

#### **BIOL 101. Concepts of Biology**

**Credit 4(3-2)**

This course is an introduction to science and the scientific method, basic biochemistry, cell structure and function, energy and metabolism, reproduction and genetics, evolution, life's diversity, and basic ecological principles for those students planning to enroll in additional major courses in the biological sciences. The laboratory will emphasize central biological concepts. Prerequisite: Credit or concurrent enrollment in CHEM 106 and 116. (F;S)

#### **BIOL 160. General Zoology**

**Credit 4(3-2)**

This is an introductory study of structure, physiology and phylogeny of the major animal phyla. The laboratory emphasizes the comparative anatomy and taxonomy of the animals. Prerequisite: BIOL 101. (F;S;SS)

#### **BIOL 220. Basic Microbiology**

**Credit 4(2-4)**

This is an introduction to the fundamentals of microbiology and the role of microorganisms in daily life. Special emphasis is placed on infectious diseases and immunology. The laboratory introduces students to the principles of microscopy, specimen preparation for light microscopy, aseptic techniques, cultivation techniques, and the biochemical activities of microorganisms. This course is not open to majors in Biology and Chemistry. Prerequisites: BIOL 100 or 101; CHEM 104 or its equivalent. (F;S;SS)

#### **BIOL 221. General Microbiology**

**Credit 4(2-4)**

This is an introduction to the basic principles of microbiology. Microbial ultrastructure, growth, metabolism, molecular genetics, diversity, infectious diseases, and immunology will be discussed. The laboratory introduces students to the principles of microscopy, specimen preparation for light microscopy, aseptic techniques, cultivation techniques, and the biochemical activities of microorganisms. Prerequisites: BIOL 101, CHEM 107 and 117. (F;S;SS)

#### **BIOL 240. General Botany**

**Credit 4(2-4)**

Plants as living organisms constitute an integral part of man's environment. Emphasis is placed on the relationship between plant structure and function, the diversity of organisms traditionally classified as plants, and plant physiology. The laboratory will emphasize plant structure and function. Prerequisite: BIOL 101. (F;S)

#### **BIOL 260. Comparative Evolution of the Vertebrates**

**Credit 4(2-4)**

This course is a comparative study of chordate organ systems with rather detailed emphasis on the evolution and organogenesis of primitive chordates, dogfish shark and the cat. The laboratory emphasizes the comparative anatomy of representative chordates. Prerequisite: BIOL 101. (F;S)

#### **BIOL 361. Human Anatomy and Physiology**

**Credit 4(2-4)**

This course is a study of the general structure and function of the human body. It is not open to Biology majors. The laboratory emphasizes human anatomy and major physiological processes. Prerequisites: BIOL 100, CHEM 104 or its equivalent. (F;SS)

**BIOL 369. Human Anatomy****Credit 3(2-2)**

This course is a general introduction to human anatomy. The laboratory emphasizes the fundamental structure of the human body. This course is not open to Biology majors. Prerequisites: BIOL 100, CHEM 104 or its equivalent. (F;S;SS)

**BIOL 370. Human Physiology****Credit 3(2-2)**

This is an introductory course with emphasis placed on basic principles and mechanisms of physiological functioning of body cells, tissues and systems. The laboratory emphasizes major physiological concepts. This course is not open to Biology majors. Prerequisite: BIOL 361 or 369. (F;S;SS)

**BIOL 400. Field Biology****Credit 3(2-2)**

This course emphasizes how ecological knowledge is acquired and communicated. Fundamental techniques of sampling, numerical analysis, and the measurement of environmental factors will be studied using local aquatic and terrestrial communities. The laboratory emphasizes the study of local biomes. Prerequisite: BIOL 410. (DEMAND)

**BIOL 401. Molecular Biology (Formerly BIOL 201)****Credit 4(2-4)**

This course examines the molecular events in cell function using molecular genetics, cell biology, and fundamental biochemistry; using both prokaryotic and eukaryotic systems. The laboratory will emphasize fundamental techniques used in molecular biology. Prerequisites: BIOL 101 and CHEM 107. (F)

**BIOL 410. Ecology (Formerly BIOL 310)****Credit 3(3-0)**

This course surveys the major principles underlying the interactions between living organisms and their environment. Both plant and animal examples will be used to illustrate the basic ecological processes. Emphasis is placed on the characterization of different physical environments; ecosystem processes such as ecological energetics and nutrient cycling; and current organismal concepts of adaptation, niche, population dynamics, life-history phenomena, organismal interactions and community organization. Major environmental issues concerning humans and their cultures will also be presented. Prerequisites: BIOL 101, CHEM 107 and 117. (F)

**BIOL 430. Plant Taxonomy****Credit 4(2-4)**

The fundamentals of taxonomy, botanical nomenclature and modern systematics are covered. An introduction to selected families and genera of vascular plants is included. The laboratory provides exposure to the common elements of the local flora and instruction in herbarium techniques. Prerequisite: BIOL 240. (DEMAND)

**BIOL 432. Plant Physiology****Credit 4(2-4)**

This course is designed to develop a clear understanding of the basic physiological processes related to the structure, growth, and function of seed plants. The laboratory will emphasize major concepts in plant physiology. Prerequisites: BIOL 240 and CHEM 107. (DEMAND)

**BIOL 460. Invertebrate Zoology****Credit 4(2-4)**

A comprehensive study of the morphology, function, phylogeny, classification and the life histories of representative forms of lower and higher invertebrate groups exclusive of insects. The laboratory emphasizes the functional morphology of the invertebrates. Prerequisite: BIOL 160. (DEMAND)

**BIOL 461. Sociobiology****Credit 3(3-0)**

This course stresses the biological basis of social behavior and the organization of animal societies. Prerequisite: BIOL 410. (DEMAND)

**BIOL 462. Introductory Cell Physiology****Credit 4(2-4)**

This course is a treatment at the molecular level of the fundamental processes of living cells. The biochemistry of cellular constituents, bioenergetics, intermediary metabolism, and the regulatory mechanisms of the cell will be discussed. The laboratory will include exercises on the measurement of hydrogen ion activity, physical and chemical properties of macromolecules and membranes, chromatography, enzymes and enzyme kinetics, cell fractionation studies, and the use of spectrophotometry in the identification and characterization of cellular macromolecules. Prerequisites: BIOL 401 and CHEM 222. (S)

**BIOL 465. Histology****Credit 4(2-4)**

This course is a study of the microscopic anatomy of cells, tissues, and organs with special emphasis on normal histological structure and function. The laboratory emphasizes the major tissues. Prerequisite: BIOL 160. (DEMAND)

**BIOL 466. Principles of Genetics****Credit 3(2-2)**

This course is a study of the traditional, classical areas of genetics as well as an introduction to gene action at the molecular level, including DNA and RNA structure, function and interactions in cellular systems. The laboratory features exercises with *Drosophila*. Prerequisite: BIOL 401 and CHEM 221. (F)

**BIOL 467. General Entomology****Credit 3(2-2)**

This course emphasizes the structure, description, and habits of the principal orders of insects. Laboratory work will consist of collecting, mounting, preserving, and classification of principal insect representatives. Recommended for general science and biological science majors. Prerequisite: BIOL 160. (DEMAND)

**BIOL 468. Biology, Technology, and Ethics I****Credit 1(0-2)**

This course evaluates recent technological advances in biology and how these advances impact societal issues and create ethical concerns. The course uses a seminar format. It is required for all undergraduate biology majors. Prerequisite: Senior standing. (F)

**BIOL 469. Biology, Technology, and Ethics II (Formerly BIOL 569)****Credit 1(0-2)**

This seminar course is concerned with ethical issues in biology. It is required for all pre-professional Biology majors. Prerequisite: BIOL 568. (S)

**BIOL 498. Independent Study****Credit 1(0-2)**

Independent study under the direction of a faculty member. The submission of a written report is required. This course should be taken as a precursor to Undergraduate Research (BIOL 499) by students who plan to conduct their research on campus. Permission of instructor required. (F;S)

**BIOL 499. Undergraduate Research****Credit 3 (0-6)**

Biological research under the direction of a faculty member. The research may be carried out in the department or as part of an internship in an off-campus academic or industrial setting. A written paper, an abstract, and an oral presentation open to the public are required. Limited to Biology majors with a 3.0 GPA overall and in the major. The student should register for the course the semester the research will be completed or in the fall for research done the previous summer. Permission of instructor required. (F;S)

**BIOL 530. Plant Pathology****Credit 4(2-4)**

This course is an introduction to the organisms and environmental conditions that cause disease in plants, the disease cycle, the effects of diseases on host plants, the nature of plant resistance, and strategies for controlling plant disease. A survey of major pathogens and plant diseases with an emphasis on important agricultural and horticultural plants is included. The laboratory emphasizes the identification of plant pathogens. Prerequisite: BIOL 240. (DEMAND)



**BIOL 561. Developmental Biology****Credit 4(2-4)**

This course is an introduction to the cellular and molecular aspects of development in animal and plant systems. Laboratory exercises provide an introduction to techniques in classical experimental embryology and modern developmental biology. Prerequisites: BIOL 401, 260. BIOL 462 is recommended. (S)

**Advanced Undergraduate and Graduate****BIOL 610. Prokaryotic Biology****Credit 4(2-4)**

This course is a survey of the taxonomy, classification, ultrastructure, reproduction, physiology, and ecology of selected bacteria and bacteriophages. The laboratory will emphasize self-instruction and independent study. Prerequisites: BIOL 220 or 221 and BIOL 466. (DEMAND)

**BIOL 620. Food Microbiology (Formerly Biol. 420)****Credit 4(2-4)**

This is a survey of selected topics in food microbiology. The course will cover the metabolic pathways, organisms and processes involved with food production from fermented dairy products, vegetables, fruits and meats. Food spoilage, preservation, infection, and intoxication will also be discussed. The laboratory will introduce students to the microorganisms involved with food production and spoilage. Prerequisite: BIOL 220 or 221. (F)

**BIOL 621. Soil Microbiology (Formerly Biol. 421)****Credit 4(2-4)**

This is a study of the major groups of soil organisms including their classification and relation to soil environments. The abundance, significance, and functions of soil microorganisms as well as their role in chemical cycles in soil will be discussed. The laboratory will emphasize methods for studying soil microbes. Prerequisite: BIOL 220 or 221. (S)

**BIOL 630. Molecular Genetics****Credit 3(3-0)**

This course will examine DNA and RNA structure, function, and processing in prokaryotic and eukaryotic systems. Various aspects of recombinant DNA technology will be examined. Prerequisites: Biology 401 and 466. (DEMAND)

**BIOL 631. Endocrine Physiology****Credit 3(3-0)**

This course will provide a basic introduction to endocrine function and include recent advances in the field of endocrinology. Emphasis will be placed on general aspects of endocrine physiology, the organization of the endocrine system, mechanisms of hormone action, and control of endocrine secretion. Prerequisites: BIOL 401 and 462. (DEMAND)

**BIOL 642. Special Problems in Biology****Credit 3(2-2)**

This course offers laboratory research projects on specific problems in biology for advanced students. The lecture portion of the course will emphasize central concepts in the research area. Prerequisites: BIOL 462, or 466 or permission of instructor and advisor. (DEMAND)

**BIOL 650. Frontiers in Molecular Biology****Credit 4(2-4)**

This course focuses on the theory, methods, and applications of recombinant DNA technology. It includes special topics in molecular, cellular, and developmental biology. The laboratory will provide hands-on exposure to the polymerase chain reaction, gene sequencing, development of gene libraries, and other techniques in molecular biology. (DEMAND)

**BIOL 661. Mammalian Biology****Credit 3(3-0)**

This course is a study of the evolutionary history, classification, adaptation and variation of representative mammals. Prerequisites: BIOL 160 and 260. (DEMAND)

**BIOL 665. Evolution****Credit 3(3-0)**

This course will emphasize the genetics of populations and sources of genetic variation; causes of genetic change in populations including natural selection; speciation; and the evolutionary history of life on earth. Prerequisites: BIOL 410 and 466. (DEMAND)

**BIOL 667. Animal Physiology****Credit 3(3-0)**

This course will provide students with an understanding of the current state of animal physiology at the level of the whole organism and its component organs and organ systems. Emphasis will be placed on function as it relates to survival of organisms in natural environments and on the regulation of homeostatic mechanisms. Topics would include metabolism, temperature regulation, reproductive mechanisms, circulation, gaseous exchange, nutrient processing, osmoregulation and ionic balance. Prerequisites: BIOL 160 and 462. (DEMAND)

**BIOL 668. Animal Behavior****Credit 3(3-0)**

This course is a study of the qualitative and quantitative difference between behavioral characteristics at different evolutionary level. Adaptiveness of differences in behavior and the development of behavior will be emphasized. Prerequisites: BIOL 410 and 466. (DEMAND)

**BIOL 671. Principles and Practices of Immunology****3(3-0)**

This course is a study of mammalian immune responses; particularly in humans. Special emphasis will be placed on the physiology, genetics, and regulation of immune responses. Interrelationships between nonspecific and specific immune reactions, humoral and cell-mediated immunity, effector cells, and diseases are also stressed along with research and diagnostic methodologies. Prerequisites: BIOL 221, 466; CHEM 221, 222. (S)

**DIRECTORY OF FACULTY**

**David W. Aldridge** ..... **Professor and Interim Chairperson**  
B.S., M.A., University of Texas-Arlington; Ph.D., Syracuse University; Postdoctoral,  
Woods Hole Marine Biological Laboratories

**Jerry Bennett** ..... **Associate Professor**  
B.S., Tougaloo College; M.S., Atlanta University; Ph.D., Iowa State University

**Roy Coomans** ..... **Associate Professor**  
B.S., Eckerd College; Ph.D., University of North Carolina at Chapel Hill

**Doretha B. Foushee** ..... **Associate Professor**  
B.S., Shaw University; M.S., North Carolina Central University; Ph.D., University of  
Maryland

**Andrew G. Goliszek** ..... **Associate Professor**  
B.S., University of West Florida; M.S., Ph.D., Utah State University; Postdoctoral, Wake Forest  
University

**Martin K. Green** ..... **Instructor (Part Time)**  
B.S. University of North Carolina at Wilmington; M.S., North Carolina A&T State University

**Thomas L. Jordan** ..... **Associate Professor**  
B.A., Rockhurst College; M.S., University of Washington-Seattle; Ph.D., University of  
Wisconsin-Madison

**Perry V. Mack** ..... **Professor**  
B.S., South Carolina State College; M.S., North Carolina Central University; Ed.D., Rutgers  
University, Extramural Associate, N.I.H.-Bethesda

**Bette L. McKnight** ..... **Associate Professor**  
B.A., Barber-Scotia College; M.T., Watts Hospital School of Medical Technology; M.A., North  
Carolina Central University; Ph.D., Meharry Medical College; Postdoctoral, University  
California at Berkeley

- Mary A. Smith** ..... **Associate Professor**  
B.S., M.S. Morgan State University; Ph.D. Cornell University; Postdoctorals, Cornell University  
and Michigan State University
- Joseph J. Whittaker** ..... **Associate Professor**  
A.B., Talladega College; Ph.D., Meharry Medical College; Postdoctorals, Purdue University  
and Washington University
- James A. Williams** ..... **Professor**  
A.B., Talladega College; M.S., Atlanta University; Ph.D., Brown University

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## Department of Chemistry

<http://www.chem.ncat.edu/>

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**Etta Gravely, Interim Chairperson**

### OBJECTIVES

The objectives of the Department of Chemistry are as follows:

1. to prepare chemistry majors for graduate study in chemistry or other chemistry-based sciences;
2. to prepare majors for admittance to medical, dental, and other professional schools;
3. to prepare majors for careers as professional chemists;
4. to prepare majors to teach chemistry at the secondary school level;
5. to provide majors in other departments with a functional understanding of chemistry commensurate with the needs of their chosen fields;
6. to provide all students served by the department with an insight into the nature of scientific investigations and the scientific enterprise in general;
7. to offer for graduate students learning experiences and research leading to a M.S. Degree in chemistry;
8. to offer learning experiences and research leading to a M.S. Degree in education with a concentration in chemistry;
9. to share the resources (human and physical) of the department with the local and academic community through cooperative programs, workshops, seminars, course offerings, etc.; and
10. to contribute to the extension of basic knowledge in chemistry and related sciences through applied and basic research, educational experimentation, publications, etc.

### DEGREES OFFERED

Chemistry – Bachelor of Science

Chemistry, Secondary Education – Bachelor of Science

Chemistry – Masters of Science\*

Chemistry, Secondary Education – Masters of Science\*

*\*See the Graduate School Bulletin*

### GENERAL PROGRAM REQUIREMENTS

Chemistry Major – the professional major in chemistry must complete 124 semester hours of University courses. The student may select one of three options in order to complete the professional major. The options are The American Chemical Society (ACS) Certified Program, Biochemistry Program, or the Pre-Health Program. The ACS program requires that the student to complete 45 semester hours in basic chemistry courses and six to eight hours in advanced chemistry courses. The Biochemistry Program requires the student to complete 45 semester hours in basic chemistry courses, six to eight hours in advanced chemistry courses and 16 semester hours of basic biology courses. The Pre-Health Program requires the student to complete 45 semester hours in basic chemistry courses and 16 semester hours of basic biology courses. A minimum grade of “C” must be achieved in all basic chemistry courses.



**Teaching Major in Chemistry** – The teaching major in chemistry must complete a minimum of 125 semester hours of University courses. Included in these 125 hours are 36 semester hours of basic chemistry courses. A minimum grade of “C” must be achieved in all basic chemistry courses.

**Bachelor of Science/Master of Science in Chemistry** – The curricula are identical in the first two years to the professional major’s program leading to the Bachelor of Science degree. It is designed to enable talented undergraduate students to obtain the B.S. and M.S. degrees, in chemistry during a five year period of study and research. Any rising junior in chemistry with a grade point average of 3.0 in chemistry and 2.7 overall average is eligible.

### ACCREDITATION

The professional curriculum (ACS Certified Program) is accredited by the American Chemical Society. All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

### CAREER OPPORTUNITIES

B.S. level graduates in chemistry qualify for employment in many fields. There are many career opportunities for chemists in education, government, and industry.

In industry, the chemistry graduate with a B.S. degree may be employed in manufacturing-plant management, research and development, product development, technical sales, marketing, etc. B.S. level chemists work in research at federal, state, municipal, and university laboratories.

The B.S. degree program prepares students to pursue graduate study in chemistry or other chemistry-based sciences (biochemistry, pharmacology, physiology, chemical physics, material science, etc.), medicine, dentistry, and other health professional areas.

### REQUIRED MAJOR COURSES FOR CHEMISTRY

CHEM 106	CHEM 224	CHEM 443
CHEM 107	CHEM 231	CHEM 444
CHEM 108	CHEM 232	CHEM 451
CHEM 116	CHEM 431	CHEM 452
CHEM 117	CHEM 432	CHEM 511
CHEM 221	CHEM 441	CHEM 545
CHEM 222	CHEM 442	CHEM 610
CHEM 223		

### CURRICULUM GUIDE FOR PROFESSIONAL CHEMISTRY, ACS CERTIFIED

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 106	3	CHEM 107	3
CHEM 108	1	CHEM 117	1
CHEM 116	1	ENGL 101	3
ENGL 100	3	Humanities Elective <sup>4</sup>	3
Social Science Elective <sup>1</sup>	3	MATH 132	4
MATH 131 <sup>2</sup>	4	PHED <sup>3</sup>	<u>1</u>
PHED <sup>3</sup>	<u>1</u>		15
	16		

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
BIOL 101	4	Biology Elective <sup>5</sup>	<u>3</u>
	17		16

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 441	3	CHEM 442	3
CHEM 224	2	CHEM 443	1
CHEM 451	3	CHEM 511	3
CHEM 452	2	CHEM 610	2
Humanities Elective <sup>4</sup>	3	Social Science Elective <sup>1</sup>	3
Elective	<u>3</u>	FOLA <sup>6</sup>	<u>3</u>
	16		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 431	3	Advanced Chem. Electives <sup>7</sup>	3-4
CHEM 432	2	Electives	<u>12</u>
CHEM 444	1		15-16
CHEM 545	3		
Advanced Chem. Electives <sup>7</sup>	3-4		
FOLA <sup>6</sup>	<u>3</u>		
	15-16		

Total Credit Hours: 125-127

<sup>1</sup> Courses which may be taken as social science electives and meet the African/African American and/or Global studies requirement: HIST 100, 101, 215, 216, 201, 202, 412, 416, SOWK 414, COMM 302.

<sup>2</sup> Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

<sup>3</sup> PHED 200 may be substituted for the two courses in Physical Education.

<sup>4</sup> Courses which may be taken as humanities electives: ENGL 200, 201, 333.

<sup>5</sup> Choice of any biology course that requires BIOL 101 as a prerequisite.

<sup>6</sup> Two consecutive courses in the same foreign language.

<sup>7</sup> To be selected from CHEM 611, 621, 631, 641, 643, 651, 652 and 503 or 504.

## CURRICULUM GUIDE FOR PROFESSIONAL CHEMISTRY, PRE-HEALTH

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 106	3	CHEM 107	3
CHEM 108	1	CHEM 117	1
CHEM 116	1	ENGL 101	3
ENGL 100	3	Social Science Elective <sup>1</sup>	3
Social Science Elective <sup>1</sup>	3	MATH 132	4
MATH 131 <sup>2</sup>	4	PHED <sup>3</sup>	<u>1</u>
PHED <sup>3</sup>	<u>1</u>		15
	16		

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
Humanities Elective <sup>4</sup>	<u>3</u>	BIOL 101	<u>4</u>
	17		16

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 441	3	CHEM 442	3
CHEM 224	2	CHEM 443	1
CHEM 451	3	CHEM 511	3
CHEM 452	2	CHEM 610	2
ELECTIVE	3	BIOL 260	4
Humanities Elective <sup>4</sup>	<u>3</u>	FOLA <sup>5</sup>	<u>3</u>
	16		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 431	3	CHEM 651	3
CHEM 432	2	CHEM 652	2
CHEM 444	1	Biology Elective <sup>6</sup>	4
PSYC 324	3	Advanced Chem. Elective <sup>7</sup>	3-4
BIOL 561	4	ELECTIVE	<u>3</u>
FOLA <sup>5</sup>	<u>3</u>		15-16
	16		

Total Credit Hours: 125-127

<sup>1</sup> Courses which may be taken as social science electives and meet the African/African American and/or Global studies requirement: HIST 100, 101, 215, 216, 201, 202, 412, 416, SOWK 414, COMM 302.

<sup>2</sup> Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

<sup>3</sup> PHED 200 may be substituted for the two courses in Physical Education.

<sup>4</sup> Courses which may be taken as humanities electives: ENGL 200, 201, 333.

<sup>5</sup> Two consecutive courses in the same foreign language.

<sup>6</sup> Choice of any biology course that requires BIOL 101 as a prerequisite.

<sup>7</sup> To be selected from CHEM 611, 621, 631, 641, 643, 651, 652 and 503 or 504.

## CURRICULUM GUIDE FOR PROFESSIONAL CURRICULUM CHEMISTRY, BIOCHEMISTRY

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 106	3	CHEM 107	3
CHEM 108	1	CHEM 117	1
CHEM 116	1	ENGL 101	3
ENGL 100	3	BIOL 101	4
Social Science Elective <sup>1</sup>	3	MATH 132	4
MATH 131 <sup>2</sup>	4	PHED <sup>3</sup>	<u>1</u>
PHED <sup>3</sup>	<u>1</u>		16
	16		

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
BIOL 401	4	Humanities Elective <sup>4</sup>	<u>3</u>
	17		15

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 441	3	CHEM 442	3
CHEM 224	2	CHEM 443	1
CHEM 451	3	CHEM 511	3
CHEM 452	2	CHEM 610	2
FOLA <sup>5</sup>	3	FOLA <sup>5</sup>	3
Social Science Elective <sup>1</sup>	<u>3</u>	Humanities Elective <sup>4</sup>	<u>3</u>
	16		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 431	3	CHEM 651	3
CHEM 432	2	CHEM 652	2
CHEM 444	1	Advanced CHEM Elective <sup>6</sup>	3-4
Advanced Chem. Elective <sup>6</sup>	3-4	Elective	<u>6</u>
BIOL 221	4		14-15
BIOL 466	<u>3</u>		
	16-17		

Total Credit Hours: 125-127

<sup>1</sup> Courses which may be taken as social science electives and meet the African/African American and/or Global studies requirement: HIST 100, 101, 215, 216, 201, 202, 412, 416, SOWK 414, COMM 302.

<sup>2</sup> Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

<sup>3</sup> PHED 200 may be substituted for the two courses in Physical Education.

<sup>4</sup> Courses which may be taken as humanities electives: ENGL 200, 201, 333.

<sup>5</sup> Two consecutive courses in the same foreign language.

<sup>6</sup> To be selected from CHEM 611, 621, 631, 641, 643, 651, 652 and 503 or 504.

## CURRICULUM GUIDE FOR CHEMISTRY, SECONDARY EDUCATION

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 106	3	CHEM 107	3
CHEM 108	1	CHEM 117	1
CHEM 116	1	ENGL 101	3
ENGL 100	3	Social Science Elective <sup>3</sup>	3
CUIN 102	2	MATH 132	4
MATH 131 <sup>1</sup>	4	PHED <sup>2</sup>	1
PHED <sup>2</sup>	<u>1</u>	CUIN 101	<u>1</u>
	16		16



## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	BIOL Elective <sup>4</sup>	4
BIOL 101	4	CUIN 301	<u>2</u>
	17		16

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 441	3	CHEM 443	1
CHEM 224	2	CHEM 511	3
CHEM 451	3	FOLA <sup>5</sup>	3
PHYS 252	1	CUIN 436	3
CUIN 400	2	SPCH 250	3
Social Science Elective <sup>3</sup>	3	Humanities Elective <sup>6</sup>	<u>3</u>
FOLA <sup>5</sup>	<u>3</u>		16
	17		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 431	3	CUIN 500	3
CHEM 432	2	CUIN 535	3
CUIN 624	3	CUIN 560	<u>6</u>
Humanities Elective <sup>6</sup>	3		12
PSYC 320	3		
EASC 309	<u>3</u>		
	17		

Total Credit Hours: 127

<sup>1</sup> Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

<sup>2</sup> PHED 200 may be substituted for the two courses in Physical Education.

<sup>3</sup> Courses which may be taken as social science electives and meet the African/African American and/or Global studies requirement: HIST 100, 101, 215, 216, 201, 202, 412, 416, SOWK 414, COMM 302.

<sup>4</sup> Choice of any biology course that requires BIOL 101 as a prerequisite.

<sup>5</sup> Two consecutive courses in the same foreign language.

<sup>6</sup> Courses which may be taken as humanities electives: ENGL 200, 201, 333.

Note: Student must pass PRAXIS I and be admitted to the Teacher Education Program by the end of the sophomore year and must Pass PRAXIS II before observation and student teaching.

## B.S./M.S. CURRICULA

Additional required Chemistry courses beyond the B.S. level are: CHEM 611, 701, 702, 722, 732, 743 or 749, 799, and 5 hours from among 600 and 700 level chemistry courses.

## COURSE DESCRIPTIONS IN CHEMISTRY

### CHEM 099. Introductory Chemistry

**Credit 3(3-0)**

This course emphasizes basic methods and concepts in chemistry with emphasis on solving chemistry problems. It is a recommended first course in chemistry for students having little or no background in high school chemistry. May be used as preparation for CHEM 101, 104, or 106. (F;S)

### CHEM 100. Physical Science\*

**Credit 3(3-0)**

This is a one semester introductory course designed to make clear the nature of science as an enterprise and illustrate by numerous examples how science really proceeds. Learning experi-

ences are constructed so that they closely approximate real life situations where one has to search for clues and insights from a variety of sources. This course is not open to students who have received credit for CHEM 101, 102, 104, 105, 106, or 107. (F;S;SS)

**CHEM 104. General Chemistry IV\***

**Credit 3(3-0)**

This course is an introduction to fundamental techniques and concepts in chemistry, including writing and interpretation of symbols, formulas, equations, atomic structure, composition and reactions of inorganic compounds. This course is not open to majors in chemistry, physics, biology, mathematics and engineering. (F;S;SS)

**CHEM 106. General Chemistry VI\***

**Credit 3(3-0)**

This is a course which emphasizes basic principles and important theoretical concepts of chemistry. Topics will include atomic structure, electronic configuration, the wave mechanical model of the atom, chemical bonding, states of matter, chemical equilibria, systems of acids and bases, and electrochemistry. Prerequisites: 2 units of high school algebra or equivalent, and 1 unit of high school chemistry or CHEM 099. (F;S;SS)

**CHEM 107. General Chemistry VII\***

**Credit 3(3-0)**

This course is a continuation of CHEM 106. It includes chemistry of important metals and nonmetals and a rigorous treatment of qualitative inorganic analysis. (F;S;SS)

**CHEM 108. Chemistry Orientation**

**Credit 1(1-0)**

This course is a series of lectures and discussions on the nature and requirements of the chemical profession the application of chemistry to modern living, and other selected topics. (F)

**CHEM 110. Physical Science Laboratory**

**Credit 1(0-2)**

This is a laboratory course designed to bring students into working contact with the essential aspects of scientific experiences. In this course the student develops concrete ideas about the operational meaning of the scientific method and problem solving. Corequisite: CHEM 100. This course is not open to students who have received credit for CHEM 114, 115, 116, or 117. (F;S;SS)

**CHEM 114. General Chemistry IV Laboratory**

**Credit 1(0-3)**

This course is a study of inorganic reaction and substances and their relation to the processes. Corequisite: CHEM 104. (F;S;SS)

**CHEM 116. General Chemistry VI Laboratory**

**Credit 1(0-3)**

This is a course which emphasizes quantitative studies of chemical reactions such as acid-base studies, redox reactions, and equilibrium reactions. Emphasis is also placed on the development of manipulative skills in the laboratory. Corequisite: CHEM 106. (F;S;SS)

**CHEM 117. General Chemistry VII Laboratory\***

**Credit 1(0-3)**

This is a continuation of CHEM 116 with an introduction to qualitative analysis. Corequisite: CHEM 107. Prerequisite: CHEM 116. (F;S;SS)

**CHEM 210. Cooperative Experience I**

**Credit 2(2-0)**

This course is a supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University. (F;S;SS)

**CHEM 221. Organic Chemistry I\***

**Credit 3(3-0)**

This course is a study of the hydrocarbons (aliphatic and aromatic) and introduction to their derivatives. Prerequisite: CHEM 102, 105, or 107. (F;S;SS)

**CHEM 222. Organic Chemistry II\***

**Credit 3(3-0)**

This course is a continuation of the study of derivatives of hydrocarbons and more complex compounds. Prerequisite: CHEM 221. (F;S;SS)

**CHEM 223. Organic Chemistry I Laboratory\*****Credit 2(0-4)**

This laboratory course emphasizes the study of physical and chemical properties of aliphatic and aromatic compounds. Modern instrumentation such as gas and column chromatography, infrared and ultraviolet analyses are used. Corequisite: CHEM 221. (F;S;SS)

**CHEM 224. Organic Chemistry II Laboratory\*****Credit 2(0-6)**

This course is a continuation of Chemistry CHEM. However, more emphasis is placed on syntheses and qualitative analysis of organic compounds. Corequisite: CHEM 222. (F;S;SS)

**CHEM 231. Quantitative Analysis I****Credit 3(3-0)**

Titrimetric and gravimetric analyses including theory and calculations associated with acid-base equilibria, oxidation reduction, nucleation, and precipitation-complexation processes will be covered in this course. Corequisite: MATH 131. Prerequisite: CHEM 102 or 107. (S)

**CHEM 232. Quantitative Analysis I Laboratory\*****Credit 2(0-4)**

This laboratory course emphasizes the basic principles of chemical separations. Laboratory studies of gravimetric and titrimetric analyses are also encountered. Corequisite: CHEM 231. Prerequisite: CHEM 117. (S)

**CHEM 251. Elementary Biochemistry****Credit 2(2-0)**

This course is a study of fundamental cellular constituents. Emphasis is placed on physiological applications and analyses. Prerequisite: CHEM 105 or 221. This course is open to nonchemistry majors only. (F)

**CHEM 252. Elementary Biochemistry Laboratory\*****Credit 1(0-3)**

Elementary biochemical reactions are studied with emphasis placed on applications to biology, home economics and nursing. Prerequisite: CHEM 115 or 223. Corequisite: CHEM 251. (F)

**CHEM 301. Current Trends in Chemistry****Credit 2(2-0)**

This course is a series of lectures and discussions on special problems in chemistry and of the chemical profession not covered in formal courses. (F;S)

**CHEM 310. Cooperative Experience II****Credit 3(3-0)**

This course is a supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University. (F;S;SS)

**CHEM 431. Quantitative Analysis II****Credit 3(3-0)**

This course is a study of the theory and the operational features of some of the more important instruments that are currently being used as analytical tools such as ultraviolet, visible-light, and infrared spectrophotometers, electro-analytical instruments, thermometric titrators, fluorimeters, etc. Prerequisite: CHEM 441. Corequisite: CHEM 442, 444. (F)

**CHEM 432. Quantitative Analysis II Lab****Credit 2(0-4)**

This laboratory course features the utilization of modern instruments such as ultraviolet, visible and infrared, and atomic absorption spectrophotometers, chromatographs (gas-liquid and liquid), electroanalyzer, and electrophoretic analyzer. Corequisite: CHEM 431. (F)

**CHEM 441. Physical Chemistry I****Credit 3(3-0)**

This course is a study of the fundamental laws governing matter in the gaseous state, and the laws of thermodynamics and their applications to chemistry; it includes an introduction to statistical thermodynamics. Prerequisites: MATH 132, PHYS 241 and CHEM 231. (F;S)

**CHEM 442. Physical Chemistry II****Credit 3(3-0)**

This course is a continuation of CHEM 441. Solid and liquid states, solutions, phase equilibria, chemical kinetics, and electrochemistry will be studied. Prerequisite: CHEM 441. (S)



- CHEM 443. Physical Chemistry I Laboratory\*** **Credit 1(0-3)**  
Thermodynamic and kinetic studies are emphasized in this course. Corequisite: CHEM 44 1. (F;S)
- CHEM 444. Physical Chemistry II Laboratory\*** **Credit 1(0-3)**  
This is a continuation of CHEM 443. Corequisite: CHEM 442. (S)
- CHEM 451. Biotechniques in Biochemistry** **Credit 3(3-0)**  
This course will emphasize the fundamental concepts and basic principles of biological chemistry. Topics will include acid-base properties of amino acids, protein structure and function, kinetic analysis of enzymatic reactions, isolation and characterization of biomolecules, recombinant DNA technology, and computer graphics and structure calculations. Prerequisite: CHEM 222 or permission of the instructor. (F)
- CHEM 452. Biotechniques in Biochemistry Laboratory** **Credit 2(0-6)**  
This is a laboratory course that introduces the basic principles, technologies, and instrumentation of current biochemical research. Students will acquire practical experiences, and application skills for the isolation and characterization of biomolecules. The course will encompass spectroscopic, chromatographic, electrophoretic, and recombinant DNA technologies. Error analysis and statistical analysis of experimental data will be included. Prerequisites: CHEM 224 and 251, or permission of the instructor. Corequisite: CHEM 451. (F)
- CHEM 503. Chemical Research** **Credit 4(0-10)**  
This course makes use of the laboratory and library facilities in studying minor problems of research. Prerequisites: Advanced standing and permission of the Department. (F;S;SS)
- CHEM 504. Independent Study** **Credit 4(0-10)**  
This course involves independent study or research in a particular area of chemistry. Prerequisites: Permission of the department and advanced standing. (F;S;SS)
- CHEM 511. Inorganic Chemistry** **Credit 3(3-0)**  
This course is an introductory survey of structure and bonding in inorganic compounds; coordination compounds of the transition metals; donor-acceptor interactions; bonding theories. Prerequisite: CHEM 441. Corequisite: CHEM 442. (S)
- CHEM 545. Physical Chemistry III** **Credit 3(3-0)**  
This course is a study of quantum chemistry and its application to studies of atomic and molecular structure. Prerequisite: CHEM 442. (S)
- Advanced Undergraduate and Graduate**
- CHEM 610. Inorganic Synthesis** **Credit 2(1-3)**  
A discussion of theoretical principles of synthesis and development of physical-analytical techniques in the synthesis of inorganic substances will take place in this course. Prerequisite: One year of physical chemistry. (S)
- CHEM 611. Advanced Inorganic Chemistry** **Credit 3(3-0)**  
This is a course in the theoretical approach to the systematization of inorganic chemistry. Prerequisite: CHEM 442. (F)
- CHEM 621. Intermediate Organic Chemistry** **Credit 3(3-0)**  
This course provides an in-depth examination of various organic mechanisms, reactions, structures, and kinetics. Prerequisites: CHEM 222 and CHEM 442. (F)
- CHEM 624. Qualitative Organic Chemistry** **Credit 5(3-6)**  
This is a course in the systematic identification of organic compounds. Prerequisite: One year of Organic Chemistry. (S)



**CHEM 631. Electroanalytical Chemistry** **Credit 3(3-0)**

This course is a study of the theory and practice of polarography, chronopotentiometry, potential sweep chronoamperometry and electrodeposition. The theory of diffusion and electrode kinetics will also be discussed along with the factors which influence rate processes, the double layer, adsorption and catalytic reactions. Prerequisite: CHEM 431 or equivalent. (F)

**CHEM 641. Radiochemistry** **Credit 3(3-0)**

This course is a study of the fundamental concepts, processes, and applications of nuclear chemistry, including natural and artificial radioactivity, sources, and chemistry of the radioelements. Open to advanced majors and others with sufficient background in chemistry and physics. Prerequisite: CHEM 442 or PHYS 406. (S)

**CHEM 642. Radioisotope Techniques and Applications** **Credit 2(1-3)**

The techniques of measuring and handling radioisotopes and their use in chemistry, biology, and other fields will be studied. Open to majors and non-majors. Prerequisite: CHEM 107. (F)

**CHEM 643. Introduction to Quantum Mechanics** **Credit 3(3-0)**

Non-relativistic wave mechanics and its application to simple systems by means of the operator formulation will be studied. Prerequisites: CHEM 442 and PHYS 222. Corequisite: MATH 231. (S)

**CHEM 651. General Biochemistry** **Credit 3(3-0)**

This is a study of modern biochemistry. The course emphasizes chemical kinetics and energetics associated with biological reactions and includes a study of carbohydrates, lipids, proteins, vitamins, nucleic acids, hormones, photosynthesis, and respiration. Prerequisites: CHEM 431 and 442. (S)

**CHEM 652. General Chemistry Laboratory** **Credit 2(0-6)**

This is a companion laboratory to CHEM 651. Experimentation will include isolation and characterization of biochemical substances and studies of physical properties. Students will be introduced to a variety of techniques including high performance liquid chromatography, electrophoresis, and centrifugation. Corequisite: CHEM 651. (S)

*\*Students are required to purchase supplemental materials for these general education courses.*

**DIRECTORY OF FACULTY**

**Foluso Adebodun** ..... **Associate Professor**

B.S., Jersey City State College; M.S., Ph.D., Rutgers University

**William K. Adeniyi** ..... **Associate Professor**

B.S., Hampton Institute M.S., Loyola University; Ph.D., Baylor University

**Adedoyin Adeyiga** ..... **Adjunct Assistant Professor**

B.S, Christopher Newport University; Ph.D., Virginia Commonwealth University

**Igbal Ahmad** ..... **Adjunct Instructor**

B.Sc., M.Sc., University of Karachi; M.S., North Carolina A&T State University

**Mufeed Basti** ..... **Associate Professor**

B.S., Baath University; Ph.D., Northern Illinois University

**Etta C. Gravely** ..... **Associate Professor**

B.S., Howard University; M.S., North Carolina A&T State University; Ed.D., University of North Carolina at Greensboro

**Vallie Guthrie** ..... **Associate Professor**

B.S., North Carolina A&T State University, M.S., Fisk University; Ed.D., American University

- Julius L. Harp** ..... **Associate Professor**  
B.S., York College; Ph.D., Howard University
- Jothi V. Kumar** ..... **Professor**  
B.S., Annamala University; Ph.D., Kansas State University
- Claude N. Lamb** ..... **Associate Professor**  
B.S., Mount Union College; M.S., North Carolina Central University; Ph.D., Howard University
- Antonia Lamberth** ..... **Adjunct Instructor**  
B.S., M.S., North Carolina A&T State University
- Calvin Miller** ..... **Adjunct Instructor**  
B.S., Saint Andrews Presbyterian College; M.S., North Carolina A&T State University
- Abdul K. Mohammed** ..... **Associate Professor**  
B.Sc., University of Benin; Ph.D., Louisiana State University
- Evans Oviosun** ..... **Adjunct Instructor**  
B.S., Western Carolina University; M.S. North Carolina A&T State University
- Ashish Pandya** ..... **Adjunct Assistant Professor**  
M.Sc., Indian Institute of Technology; M.S., University of Arizona, Ph.D., Virginia Polytechnic Institute and State University
- David Pollard** ..... **Adjunct Instructor**  
B.S., M.S., North Carolina A&T State University
- Yongmei Wang** ..... **Associate Professor**  
B.S., The Science and Technology University of China; Ph.D., The University of Notre Dame
- Alex N. Williamson** ..... **Associate Professor**  
B.S., Jackson State University; Ph.D., University of Illinois at Urbana

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## **Department of English**

<http://www.ncat.edu/~english>

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**Michele Levy, Chairperson**

### **OBJECTIVES**

The objectives of the English Department are as follows:

1. to provide instruction in reading and writing skills, the humanities, linguistics, and literature;
2. to prepare English majors and minors to teach and to pursue graduate training in English and other professions;
3. to train students in professional writing.

### **DEGREES OFFERED**

English, Professional – Bachelor of Arts

English, Secondary Education – Bachelor of Science

English, Technical Writing – Bachelor of Science

English Education – Master of Science\*

English and African-American Literature – Master of Arts\*

*\*See the Graduate School Bulletin*

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate programs in the Department of English is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

**Professional English major**—The English major must complete 124-125 semester hours of University courses. (Whether the total is 124 or 125 semester hours depends on whether the student satisfies the Physical Science requirement with a three-credit or a four-credit course.) Included in the 124-125 semester hours are 45 hours of English at the 200 level or above for the professional major. A minimum grade of “C” must be achieved in these courses.

**Teaching Major in English**—The teaching major in English must complete a minimum of 125-126 semester hours of University courses. (Whether the total is 125 or 126 semester hours depends on whether the student satisfies the Physical Science requirement with a three-credit or a four-credit course.) Included in these 125-126 hours are 42 semester hours of English courses at the 200 level or above with grades of “C” or better.

**The Minor in English (teaching and non-teaching)**—Students desiring a minor in English must complete 24 semester hours in English at the 200 level or above. The required courses are ENGL 200, 201, 210, 220 or 221, 300, 430 or 431, 450 and one of the following: 260, 333, 401, 435, and 436.

### **CAREER OPPORTUNITIES**

A degree in English prepares students to teach, to conduct research, to pursue graduate and professional degrees (such as law and library science), and to work in government, business, editing, and numerous other jobs requiring mastery of the language.

## REQUIRED MAJOR COURSES FOR ENGLISH, PROFESSIONAL

ENGL 102	ENGL 401	ENGL 436
ENGL 210	ENGL 410	ENGL 450
ENGL 220	ENGL 430	ENGL 500
ENGL 221	ENGL 431	ENGL 501
ENGL 300	ENGL 435	

## CURRICULUM GUIDE FOR ENGLISH, PROFESSIONAL

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101 <sup>1</sup>	3	MATH 102 <sup>1</sup>	3
HIST 100	3	HIST 101	3
BIOL 100	4	CHEM 100 and 110 (4) or	
PHED (Activity Course)	1	PHYS 110 and 111 (3) or	
ENGL 102	<u>2</u>	EASC 201 (3)	3-4
	16	PHED (Activity Course)	1
		ENGL 210	<u>3</u>
			16-17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Elective	3	FOLA <sup>2</sup>	3
FOLA <sup>2</sup>	3	Social Science Elective	3
ENGL 200	3	ENGL 201	3
SPCH 250	3	ENGL 221	3
ENGL 220	3	Elective	<u>3</u>
PSYC 320	<u>3</u>		15
	18		

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 300	3	ENGL 501	3
ENGL 500	3	ENGL 401	3
ENGL 430	3	ENGL 431	3
Electives	3	Elective	3
African-American Elective	<u>3</u>	ENGL Elective	<u>3</u>
	15		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 450	3	ENGL 410	3
ENGL 435	3	ENGL 436	3
Electives	<u>2</u>	Electives	<u>8</u>
	15		14

Total Credit Hours: 125



## REQUIRED MAJOR COURSES FOR ENGLISH, SECONDARY EDUCATION

ENGL 102	ENGL 410	ENGL 450
ENGL 210	ENGL 425	ENGL 460
ENGL 220	ENGL 430	ENGL 500
ENGL 221	ENGL 431	ENGL 501
ENGL 300	ENGL 435 or ENGL 436	ENGL 627
ENGL 401		

## CURRICULUM GUIDE FOR ENGLISH, SECONDARY EDUCATION

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101 <sup>1</sup>	3	MATH 102 <sup>1</sup>	3
HIST 100	3	HIST 101	3
BIOL 100	4	CHEM 100 and 110 (4) or	
PHED (Activity Course)	1	PHYS 110 and 111 (3) or	
ENGL 102	<u>2</u>	EASC 201 (3)	3-4
	16	ENGL 210	3
		PHED 200	<u>2</u>
			17-18

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 204 or 205	3	ENGL 221	3
ENGL 220	3	FOLA <sup>2</sup>	3
FOLA <sup>2</sup>	3	ENGL 201	3
ENGL 200	3	SPCH 250	3
PSYC 320	3	CUIN 300	2
ENGL 425	<u>3</u>	ENGL 300	<u>3</u>
	18		17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 430	3	ENGL 431	3
ENGL 436 or 435	3	ENGL 501	3
CUIN 301	2	ENGL 401	3
ENGL 500	3	CUIN 102	3
COMM 231 or 331 or 431	1	ENGL 410	3
African-American Elective		ENGL 460	<u>3</u>
(Non-English Course)	<u>3</u>		18
	15		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 450	3	CUIN 624	3
ENGL 627	3	CUIN 500	3
CUIN 436	3	CUIN 560	<u>6</u>
CUIN 526	<u>3</u>		12
	12		

Total Credit Hours: 125-126

<sup>1</sup> Students having to take MATH 100 (a remedial course) still must complete MATH 101 & 102 or their equivalent.

<sup>2</sup> French, Spanish or German through intermediate level. Acceptable courses: FOLA 300, 301; SPAN 320, 321; GERM 422, 423. Eligibility to enroll in any one of these is established by placement test or by successful completion of elementary level of appropriate language.

## REQUIRED MAJOR COURSES FOR ENGLISH, TECHNICAL WRITING

ENGL 411  
ENGL 412

ENGL 413  
ENGL 414

ENGL 415  
ENGL 729

## CURRICULUM GUIDE FOR ENGLISH, TECHNICAL WRITING

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101 <sup>1</sup>	3	MATH 102 <sup>1</sup>	3
HIST 100	3	HIST 101	3
BIOL 100	4	CHEM 100 and 110 (4) or	
PHED (Activity Course)	1	PHYS 110 and 111 (3) or	
ENGL 102	<u>2</u>	EASC 201 (3)	3-4
	16	ENGL 210	3
		PHED (Activity Course)	<u>1</u>
			16-17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Elective	3	GCS Elective <sup>1</sup>	3
GCS 110	3	Social Science Elective	3
ENGL 200	3	ENGL 201	3
SPCH 250	3	ENGL 221	3
ENGL 220	3	Elective	<u>3</u>
ENGL 331	<u>3</u>		15
	18		

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 411	3	ENGL 413	3
ENGL 412	3	ENGL 414	3
ENGL 430	3	ENGL 431	3
Elective	3	Elective	3
African-American Elective	<u>3</u>	GCS Elective <sup>1</sup>	<u>3</u>
	15		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PSYC 320	3	BUED 400	3
ENGL 415	3	ENGL Elective	3
Electives	<u>9</u>	Electives	<u>8</u>
	15		14

Total Credit Hours: 124-125

<sup>1</sup>Recommended GCS electives: GCS 130 and GCS 418

## COURSE DESCRIPTIONS IN ENGLISH

### Undergraduate

**ENGL 100. Ideas and Their Expression I (Formerly ENGL 2401) Credit 3(3-0)**

This course is an introduction to college-level expository writing; it provides students with experience in writing and revising compositions. Students will also learn to write résumés, letters of application, short reports, and responses to literature. (F;S;SS)

**ENGL 101. Ideas and Their Expression II (Formerly ENGL 2402) Credit 3(3-0)**

This is a continuation of English 100 which provides students with additional experience in various modes of writing, emphasizing expository writing; it introduces students to the tech-

niques of writing the research paper and analyzing literary selections. Prerequisite: ENGL 100. (F;S;SS)

**ENGL 102. Developmental Reading (Formerly ENGL 2403) Credit 2(2-0)**

This course includes instruction and practice in methods of increasing rate of reading and techniques of comprehending written material; emphasis is upon vocabulary study skills. Limited registration. (F;S)

## HUMANITIES

**ENGL 200. Survey of Humanities I Credit 3(3-0)**

This course is a study of interrelationships of literature, music, and the fine arts; it is a study of master works, philosophical ideas, and artistic movements of Western Civilization, with attention given also to non-Western culture. It will survey cultures from ancient times to the end of the Renaissance. Prerequisite: ENGL 101. (F;S;SS)

**ENGL 201. Survey of Humanities II Credit 3(3-0)**

This course is a continuation of ENGL 200. It will begin with the Baroque period and will include Neo-Classicism, Romanticism, and modern modes of artistic expression. Prerequisites: ENGL 101 and 200. (F;S;SS)

**ENGL 202. The Humanities in America Credit 3(3-0)**

This course is a survey of the interrelationship of American and African-American literature, music, and art from colonial times to the present. The course will also include a study of the American historical, social, and philosophical experience. Prerequisite: ENGL 101. (DEMAND)

**ENGL 203. Humanities Perspectives of the South Credit 3(3-0)**

This course examines the South from the perspectives of its history, beliefs, literature, music, and art. Prerequisite: ENGL 101. (F;S)

**ENGL 204. Topics in Humanities: A Multidisciplinary Course Credit 3(3-0)**

This course is a study of selected topics in literature, art, music, philosophy, and other branches of the humanities. It is an elective course primarily for non-English majors. Prerequisite: ENGL 101. (DEMAND)

**ENGL 206. Film and Culture Credit 3(3-0)**

This course examines film as a legitimate form of artistic expression worthy of serious critical analysis. Consequently, film will be studied as history (including its relationship to other print and non-print media), aesthetic theory, ideology, and cultural artifact. Particular attention will be paid to the ways in which film not only reflects, but also shapes, contemporary culture. (F;S)

**ENGL 420. Humanities III, Great Ideas of World Civilization Credit 3(3-0)**

This is a seminar devoted to the identification, analysis, and appreciation of some of the basic ideas or concepts which have underlain world culture in the arts, religion, philosophy, and social attitudes from ancient times to the present. (DEMAND)

## LANGUAGE AND COMPOSITION

**ENGL 260. Expository Writing Credit 3(3-0)**

This course is an intensive study of the basic expository modes of narration, definition, comparison/contrast, process, etc., with a special emphasis on their adaptation to professional writing in non-technical areas. Prerequisite: ENGL 101. (F)

**ENGL 261. Writing for Magazines Credit 3(3-0)**

This course is designed to develop the student's mastery of basic magazine writing with instruction in the article types used most by magazines. Beginning with the profile and ending

with the investigative article, the course will also pay particular attention to editing for print and the development of a magazine writing style. Prerequisite: ENGL 260. (S)

**ENGL 300. Advanced Composition**

**Credit 3(3-0)**

The techniques of narrative, descriptive, expository and argumentative composition will be studied. Prerequisite: ENGL 101. (F;S;SS)

**ENGL 305. Grammar, Literature and Composition for Pre-Professional Students**

**Credit 3(3-0)**

This course refines the skills in grammar, literature, and composition that are particularly needed by pre-professional students. Recommended for students preparing for the GRE, LSAT, and NTE. Prerequisite: ENGL 101. (S)

**ENGL 310. Introductory Linguistics**

**Credit 3(3-0)**

This course is an introductory survey covering the nature of language; the various levels of linguistic analysis (phonology, morphology, syntax, and semantics); dialectology (regional and social); and comparative historical linguistics. It is strongly recommended as preparation for ENGL 450 and 501. Prerequisite: ENGL 101. (F)

**ENGL 331. Writing for Science and Technology (Formerly ENGL 460)**

**Credit 3(3-0)**

This course includes the study and practice of the basic techniques of writing and editing scientific and technical materials for both the general audience and the specialist. Prerequisite: Junior standing. (F;S;SS)

**ENGL 450. Advanced English Grammar (Formerly ENGL 2441)**

**Credit 3(3-0)**

This course is an intensive study of the structure of the English language with tolerance towards language dialects and levels as effective communication; emphasis is placed upon a knowledge of grammar essential to teaching in middle school and high school. Prerequisite: ENGL 101. (F)

**ENGL 480. Editing**

**Credit 3(3-0)**

This course is designed to teach the general techniques of editing. Integrity, clarification, style, recognition of the need for substantial changes, and methods of checking completeness are included. Prerequisite: ENGL 305. (DEMAND)

**ENGL 490. Professional Writing Internship**

**Credit 3(3-0)**

This course includes on-the-job training with an appropriate agency; and compilation of a portfolio of high caliber. Prerequisites: ENGL 261 and 480. (DEMAND)

**ENGL 501. Introduction to the History of the English Language (Formerly ENGL 2462)**

**Credit 3(3-0)**

This course is designed to develop the student's understanding of modern English syntax, vocabulary, etymology, spelling, pronunciation, and usage. (S)

**CREATIVE WRITING**

**ENGL 311. Fiction Writing**

**Credit 3(3-0)**

This course involves the development of fiction-writing skills, using short stories and novels as models. Students will produce a portfolio of their work. Prerequisites: ENGL 101, 210, and a survey course in British, American, or World Literature. (F)

**ENGL 312. Poetry Writing**

**Credit 3(3-0)**

This course involves the development of poetry-writing skills, using traditional and modern poetic forms as models. Students will produce a portfolio of their work. Prerequisites: ENGL 101, 210, and a survey course in British, American, or World Literature. (F)



**ENGL 313. Drama Writing****Credit 3(3-0)**

This course involves the development of drama-writing skills, using a broad selection of plays, ancient to modern, as models. Each student will write at least one play. Prerequisites: ENGL 101, 210, and a survey course in British, American, or World Literature. (F)

**LITERATURE****ENGL 205. Topics in Literature****Credit 3(3-0)**

This course is the study of selected topics in literature. It is an elective course primarily for non-English majors. Prerequisite: ENGL 101. (DEMAND)

**ENGL 210. Introduction to Literary Studies****(Formerly ENGL 2463)****Credit 3(3-0)**

This course is required of English majors and minors, and open to others only with approval of instructor; the critical analysis, literary criticism, investigative and bibliographical techniques necessary to advanced study in English will be studied. This course is a prerequisite for all advanced courses in literature. Prerequisite: ENGL 100. (F;S)

**ENGL 220. English Literature I (Formerly ENGL 2437)****Credit 3(3-0)**

This course is a survey of the literary movements and major authors of English literature in relation to the cultural history of England from Beowulf to 1798. Prerequisites: ENGL 101, HIST 100, and 101. (F)

**ENGL 221. English Literature II (Formerly ENGL 2438)****Credit 3(3-0)**

This course is a continuation of ENGL 220 from 1798 to the Present. Prerequisites: ENGL 100 and 101. (S)

**ENGL 333. Survey of African-American Literature****Credit 3(3-0)**

This course is the study of prose, poetry, and drama by American authors of African ancestry from the 18th century to the present. Their works will be studied in relation to the cultural and literary traditions of their times. Terry, Wheatley, Horton, Harper, Dunbar, Chesnutt, Johnson, Cullen, Bontemps, Hughes, Wright, Ellison, Baldwin, Yerby, A. Walker, M. Walker, and other writers will be included. (F;S;SS)

**ENGL 400. Survey of Dramatic Literature I (Formerly ENGL 2450)****Credit 3(3-0)**

This is a survey course in the history, literature, criticism, and arts of the theatre to the nineteenth century. Prerequisite: ENGL 210. (DEMAND)

**ENGL 401. Survey of Dramatic Literature II (Formerly ENGL 2451)****Credit 3(3-0)**

This is a continuation of English 400, from the nineteenth century to the present. Prerequisite: ENGL 210. (S)

**ENGL 410. Shakespeare (Formerly ENGL 2452)****Credit 3(3-0)**

This course is an introduction to a study of the works of William Shakespeare through a detailed examination of representative works selected from the major periods of his development as a dramatist. Prerequisite: ENGL 210. (S)

**ENGL 425. World Literature****Credit 3(3-0)**

A survey of selected major world writers from ancient times to the present will be studied in this course. (F)

**ENGL 430. American Literature I (Formerly ENGL 2455)****Credit 3(3-0)**

This course is a study of the literary movements and major authors of American literature in relation to the cultural history of America from the Colonial Period to 1865. Prerequisites: ENGL 210, ENGL 200, and 201. (F)

**ENGL 431. American Literature II (Formerly ENGL 2456)****Credit 3(3-0)**

This is a continuation of English 430, from 1865 to the present. Prerequisites: ENGL 210, ENGL 200, and 201. (S)

**ENGL 435. The Novel (Formerly ENGL 2457) Credit 3(3-0)**

This course is a study of the novel as an art form, with attention to significant English novelists from 1750 to the present. Prerequisite: ENGL 210. (F)

**ENGL 436. Modern Poetry (Formerly ENGL 2458) Credit 3(3-0)**

This course is a study of poetry as an art form, with attention to significant English and American poets of the twentieth century. Prerequisite: ENGL 210. (S)

**ENGL 445. Independent Study in English Credit 3(3-0)**

This course provides an opportunity for students to pursue independently in-depth study in literature, linguistics, or professional writing. Prerequisites: Second semester junior or senior standing, and prior consultation with department faculty. (F;S;SS)

**ENGL 460. Technology and the Teaching of English Credit 3(3-0)**

This course provides knowledge of how technology, especially the computer and non-print media, can be utilized effectively in the teaching of English and in classroom management. Students will acquire knowledge of various instructional strategies appropriate for diverse backgrounds and learning styles. Development of appropriate professional attitudes and incorporation of research findings in the instructional program will also be included. For English education majors only. (S).

**ENGL 475. British and American Literary History Credit 3(3-0)**

This course is designed to provide the student with the opportunity to develop a sense of the continuity of British and American literary history, supported by a reading of major works. Prerequisite: Senior standing. (DEMAND)

**ENGL 500. Literary Research and Criticism Credit 3(3-0)**

This course is open only to junior and senior English majors and minors. It includes advanced study in the tools and techniques of literary research and critical analysis. It also emphasizes independent study, and a study of the major schools of criticism, and culminates in the completion of a study of a problem in literature. (F)

### **TECHNICAL WRITING**

**ENGL 411. Visual Rhetoric for Technical and Scientific Writer Credit 3(3-0)**

This course provides an introduction to the theory and techniques used by scientific and technical communicators. It covers elements of layout, design, and typography, giving students practice with short and long print texts and non-print texts and non-print media. (F;S;SS)

**ENGL 412. Writing Reports and Proposals Credit 3(3-0)**

This course is an intensive study of the principles and processes involved in preparing technical and scientific reports and proposals. (F;S;SS)

**ENGL 413. Feature Writing and Editing for Technical Journals,  
Magazines and Trade Publications Credit 3(3-0)**

This course provides theory and practice in writing and marketing articles for scientific publications with students submitting articles to commercial and scientific publications. This course also examines principles and practice of editors of scientific and technical publications. Students edit other students' works and that of outside clients. (F;S;SS)

**ENGL 414. Designing and Testing User Documents for Scientific and  
Technical Credit 3(3-0)**

This course is an advanced study of theories and practices associated with the production of user documents, instructional manuals and other media. (F;S;SS)

**ENGL 415. Practicum for Technical and Scientific Communicators Credit 3(3-0)**

This course is designed to give students practical writing experience related to scientific and technical fields. Offered as an on-campus and off-campus-directed internship, the experience

teaches students the importance of client relationships, problem-solving skills, and professionalism in conduct and product. (F;S;SS)

**ENGL 729. Introduction to Writing and Editing Documents, Theses and Dissertations. Credit 3(3-0)**

This course is an intensive study in the preparation and execution of professional documents such as the thesis and the dissertation. Students can actually begin writing these documents with the instructor's close supervision and feedback on the form and style of each document. It is designed to produce documents that are both readable and accurate. (F;S;SS)

**DIRECTORY OF FACULTY**

- Sandra C. Alexander** ..... **Professor**  
B.S., North Carolina A&T State University; M.A., Harvard University; Ph.D., University of Pittsburgh
- Shirley H. Bell** ..... **Assistant Professor**  
B.S., M.S., North Carolina A&T State University; Ed.D., Auburn University at Auburn
- Brian J. Benson** ..... **Professor**  
B.A., Guilford College; M.A., University of North Carolina at Greensboro; Ph.D., University of South Carolina
- Patricia Bonner** ..... **Associate Professor**  
B.A., University of Alabama; M.A., Atlanta University; Ph.D., University of South Florida
- Jane G. Brown** ..... **Associate Professor**  
B.A., Converse College, M.A. Vanderbilt University; Ph.D., University of Dallas
- Hannah Free** ..... **Lecturer**  
B.S., M.S., North Carolina A&T State University
- Samuel Garren** ..... **Professor**  
B.A., Davidson College; M.A., Ph.D., Louisiana State University
- Michael Greene** ..... **Professor**  
B.A., Duke University; M.A., Ph.D., Indiana University
- Gibreel Kamara** ..... **Assistant Professor**  
B.A., M.A., North Carolina A&T State University; Ed.D., Temple University
- Elon Kulii** ..... **Professor**  
B.A., Winston-Salem State University; M.S., North Carolina A&T State University; Ph.D., Indiana University
- Robert T. Levine** ..... **Professor**  
B.A., Queens College of the City University of New York; M.A., Ph.D., Cornell University
- Michele F. Levy** ..... **Professor and Chairperson**  
B.A., George Washington University; M.A. and Ph.D., University of North Carolina at Chapel Hill
- Jody B. Martin** ..... **Lecturer**  
B.A., M.A., North Carolina A&T State University
- Jeffrey D. Parker** ..... **Associate Professor**  
B.A., University of North Carolina at Greensboro; M.A., North Carolina A&T State University; Ph.D., University of South Carolina



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## **Department of Foreign Languages**

<http://www.ncat.edu/~fol>

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**Carolyn Durham, Chairperson**

### **OBJECTIVES**

The specific objectives of the Department of Foreign Languages are as follows:

1. to develop facility in the listening, speaking, reading and writing of the foreign languages.
2. to develop a better knowledge of foreign cultures and an appreciable awareness of one's own culture.
3. to create a spirit of international understanding that will result in respectable attitudes toward individuals and national groups.
4. to prepare students to teach second languages in elementary through secondary schools.
5. to prepare and encourage students to continue further study and research in the major areas, foreign language literature and education.
6. to provide students with experiences to develop communicative skills and competence requisite for personal fulfillment and challenging careers in which the foreign language study will be in full use or an asset.

### **DEGREES OFFERED**

Romance Languages and Literatures-French, (Teaching, K-12) – Bachelor of Science  
Romance Languages and Literatures-Spanish, (Teaching, K-12) – Bachelor of Science  
Romance Languages and Literatures-French – Bachelor of Arts  
Romance Languages and Literatures-Spanish – Bachelor of Arts

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in the Department of Foreign Languages is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

Romance Languages (French or Spanish) – B.A. (Non-Teaching Major) - The curriculum in this area requires the student to complete a minimum of 124 semester hours of University courses. Included in the 124 hours are 33 semester hours of French or Spanish in courses beyond the elementary level. (A minimum grade of "C" must be achieved in all French or Spanish courses.)

Romance Languages (French or Spanish) - B.S. (Teaching Major) - The curriculum for the teaching major in Romance Languages (French or Spanish) requires that a student complete the courses and regulations as outlined by the School of Education for certification in the elementary and secondary schools. A student must complete a minimum of 124 semester hours of University courses. Included in the 124 hours are 33 semester hours of French or Spanish in courses beyond the elementary level. (A minimum grade of "C" must be achieved in all French or Spanish courses.) The Department also offers Teaching Certifications in both French and Spanish.



## FOREIGN LANGUAGE PLACEMENT EXAMINATION

A foreign language placement examination will be administered to entering freshmen whose programs have a language requirement and who have taken at least two consecutive years of the same foreign language in high school. The highest level in which a student can be placed is the intermediate I level. A student cannot satisfy a language requirement by taking this examination. The foreign language placement examination will be given in order to place students in the appropriate levels only.

A minor may be achieved in French or Spanish by students who complete a minimum of 18 semester hours in Spanish or French at the 300 level or above. If a student starts the French or Spanish minor at the elementary I level, a minimum of 24 semester hours must be completed.

## ACCREDITATION

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

## CAREER OPPORTUNITIES

In this time of growing internationalism, a degree in a foreign language has a high level of importance in many professional careers. For the language major, chances of employment in areas of government service, military service, teaching, international travel, law, business, industry and mass communications, to name but a few, are greatly enhanced by the training in foreign languages.

## FOREIGN LANGUAGE STUDY ABROAD/TRAVEL ABROAD

North Carolina A&T State University through the Department of Foreign Languages offers Summer Study Abroad Programs to Costa Rica, France, Mexico and Gabon (Africa). Students may receive up to six credit hours for courses successfully completed in these study abroad programs. All students participating in these programs are accompanied to the foreign countries by a program director who is a faculty member of the Department of Foreign Languages.

**Costa Rica:** Qualified students may apply to participate in this summer study abroad program, which is in conjunction with the Forester Intensive Language Institute of Costa Rica in San José, Costa Rica.

**France:** In conjunction with EF Educational Tours, students may apply for participation in this summer travel abroad program.

**Guatemala:** Qualified students may apply to participate in this summer study abroad program, which is in conjunction with the Academia de Español in Antigua, Guatemala.

**Mexico:** Qualified students may apply to participate in this summer study abroad program, which is in conjunction with Cuauhnahuac Instituto Colectivo de Lengua y Cultura in Cuernavaca, Mexico.

**Gabon (Africa):** In conjunction with the University of Masuku in Franceville, Gabon (Africa), qualified students may apply for participation in this program in order to acquire the African Francophone experience.

*All study abroad programs and cultural enrichment programs were developed by faculty within the Department of Foreign Languages at North Carolina A&T State University.*

## REQUIRED MAJOR COURSES FOR ROMANCE LANGUAGES – FRENCH

FOLA 300	FOLA 411	FOLA 505
FOLA 301	FOLA 415	FOLA 506
FOLA 400	FOLA 416	FOLA 508
FOLA 410	FOLA 417	

## REQUIRED MAJOR COURSES FOR ROMANCE LANGUAGES – SPANISH

FOLA 320	FOLA 441	FOLA 451
FOLA 321	FOLA 442	FOLA 452
FOLA 404	FOLA 450	FOLA 460
FOLA 440		

## REQUIRED MAJOR CUIN COURSES FOR ROMANCE LANGUAGES – FRENCH OR SPANISH (TEACHING, K-12)

CUIN 102	CUIN 436	CUIN 560
CUIN 301	CUIN 500	CUIN 624
CUIN 400	CUIN 527	

## CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – FRENCH

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
SOCI 100	3	SOCI 101	3
BIOL 100	4	CHEM 100	4
FOLA 300	<u>3</u>	FOLA 301	<u>3</u>
	16		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPCH 250	3	ENGL 201	3
ENGL 200	3	FOLA 411	3
FOLA 410	3	FOLA 416	3
FOLA 415	3	FOLA 105 or above	3
PSYC 320	3	PHED 200	2
FOLA 104 or above	<u>3</u>	Elective or Minor	<u>3</u>
	18		17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 400	3	FOLA 417	3
FOLA 505	3	FOLA 321 or above	3
FOLA 320 or above	3	FOLA 505 or 506	3
GEOG 210	3	Elective or Minor	<u>6</u>
Elective or Minor	<u>3</u>		15
	15		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 508	3	FOLA Electives	6
FOLA Electives	3	FOLA 103	3
FOLA 102	3	Elective or Minor	<u>3</u>
Elective or Minor	<u>6</u>		12
	15		

Total Credit Hours: 124

# CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – SPANISH

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
SOCI 100	3	SOCI 101	3
BIOL 100	4	CHEM 100	4
FOLA 320	<u>3</u>	FOLA 321	<u>3</u>
	16		16

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPCH 250	3	ENGL 201	3
ENGL 200	3	FOLA 441	3
FOLA 440	3	FOLA 451	3
FOLA 442	3	FOLA 101 or above	3
PSYC 320	3	PHED 200	2
FOLA 100 or above	<u>3</u>	Elective or Minor	<u>3</u>
	18		17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 452	3	FOLA 455	3
FOLA 404	3	FOLA 301 or above	3
FOLA 300 or above	3	FOLA 460	3
GEOG 210	3	Elective or Minor	<u>6</u>
Elective or Minor	<u>3</u>		15
	15		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 102	3	FOLA Electives	6
FOLA Electives	3	FOLA 103	3
FOLA 450	3	Elective or Minor	<u>3</u>
Electives or Minor	<u>6</u>		12
	15		

Total Credit Hours: 124

# CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – FRENCH (TEACHING, K-12)

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
SOCI 100	3	SOCI 101	3
BIOL 100	4	CHEM 100	4
FOLA 300	<u>3</u>	FOLA 301	<u>3</u>
	16		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPCH 250	3	ENGL 201	3
ENGL 200	3	FOLA 411	3
FOLA 410	3	FOLA 416	3
FOLA 415	3	FOLA 105 or above	3
FOLA 104 or above	3	CUIN 102	2
PHED 200	<u>2</u>	PSYC 320	<u>3</u>
	17		17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 400	3	FOLA 417	3
FOLA 505	3	FOLA 321 or above	3
FOLA 320 or above	3	FOLA 506	3
GEOG 210	3	Elective or Minor	<u>6</u>
CUIN 301	2		15
Elective	<u>3</u>		
	17		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 508	3	CUIN 500	3
CUIN 436	3	CUIN 527	3
CUIN 624	3	CUIN 560	<u>6</u>
FOLA 515	3		12
Elective	<u>2</u>		
	14		

Total Credit Hours: 124

## CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – SPANISH (TEACHING, K-12)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
SOCI 100	3	SOCI 101	3
BIOL 100	4	CHEM 100	4
FOLA 320	<u>3</u>	FOLA 321	<u>3</u>
	16		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPCH 250	3	ENGL 201	3
ENGL 200	3	FOLA 441	3
FOLA 440	3	FOLA 442	3
FOLA 451	3	FOLA 101 or above	3
FOLA 100 or above	3	CUIN 102	2
PHED 200	<u>2</u>	PSYC 320	<u>3</u>
	17		17



## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 452	3	FOLA 455	3
FOLA 404	3	FOLA 301 or above	3
FOLA 300 or above	3	FOLA 460	3
GEOG 210	3	CUIN 400	3
CUIN 301	2	Elective or Minor	<u>3</u>
Elective	<u>3</u>		15
	17		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA 450	3	CUIN 500	3
CUIN 436	3	CUIN 527	3
CUIN 624	3	CUIN 560	<u>6</u>
FOLA Elective	3		12
Elective	<u>2</u>		
	14		

Total Credit Hours: 124

## COURSE DESCRIPTIONS IN FOREIGN LANGUAGES

### FRENCH

#### Undergraduate

**FOLA 100. Elementary French I\*** **Credit 3(3-0)**

This is a course for beginners which emphasizes the four language skills-listening, speaking, reading, and writing. (F;S)

**FOLA 101. Elementary French II\*** **Credit 3(3-0)**

This is a continuation of FOLA 100 with further emphasis placed on the oral-aural approach. Prerequisite: FOLA 100 or equivalent. (F;S)

**FOLA 300. Intermediate French I\*** **Credit 3(3-0)**

This course consists of a brief review of pronunciation. Grammar is stressed with emphasis on cultural readings. Prerequisites: FOLA 100 and 101, or two units of high school French. (F)

**FOLA 301. Intermediate French II\*** **Credit 3(3-0)**

This course is a continuation of FOLA 300. Stress is placed on grammar, cultural reading and conversation. Prerequisite: FOLA 300 or equivalent. (S)

**FOLA 400. Phonetics** **Credit 3(3-0)**

This is a course in French sounds and diction. It is required of all students majoring and minor-ing in French, and recommended for those who wish to improve pronunciation. Prerequisites: FOLA 300 and 301. (F;S)

**FOLA 402. French for Reading Comprehension** **Credit 3(3-0)**

This course includes the development of skills needed for reading competency and interpreta-tion; preparation for French reading proficiency examinations; emphasis placed on vocabulary development; mastery of all aspects of noun/pronoun character and modifiers; knowledge of tense, mood and form of verb structure; reading comprehension analysis and evaluation of selected passages. Readings will be in areas as the humanities, mathematics, social and natural sciences. Prerequisite: Successful completion of foreign language requirements in major area or consent of instructor. (F;S)

- FOLA 405. Introduction to Business French** **Credit 3(3-0)**  
 This course will enhance the student's ability to communicate in a multilingual environment. It will equip students with the necessary tools to conduct international business transactions. The course is conducted in French. Prerequisites: FOLA 300 and 301. (F;S)
- FOLA 410. Intermediate Oral French** **Credit 3(3-0)**  
 This is an intermediate oral French course, which prepares students for FOLA 411. It is designed to enable students to understand lectures and conversations of average tempo. Prerequisites: FOLA 300 and 301. (F;S)
- FOLA 411. Advanced Oral French** **Credit 3(3-0)**  
 This course offers students intensive training in self-expression and an opportunity to improve pronunciation, diction, reading and speaking. Prerequisite: FOLA 410. (F;S)
- FOLA 415. Survey of French Literature I** **Credit 3(3-0)**  
 This course provides a general introduction to the study of French literature. It gives a clear idea of the great periods and main tendencies in history of French thought and letters from 842 to the 18th century. (F;S)
- FOLA 416. Survey of French Literature II** **Credit 3(3-0)**  
 This course is a continuation of French literature from the 18th century to the present. (F;S)
- FOLA 417. Literature of Afro-French Expression** **Credit 3(3-0)**  
 This course is an introduction to the literary style and currents of thoughts in poetry and prose of selected Afro-French writers in the Caribbean; special attention is given to "Negritude" as reflected in major works of selected Afro-French and Francophone African authors. Prerequisite: French 301 or equivalent, or consent of instructor. (F;S)
- FOLA 505. Advanced French Composition** **Credit 3(3-0)**  
 This is an advanced course in oral and written self-expression in French. Special attention given to vocabulary building, free composition and conversation, prepared and improvised, covering the many phases of everyday activities. (F;S)
- FOLA 506. Advanced French Grammar and Composition** **Credit 3(3-0)**  
 This course is designed to give students practical training in the use of advanced French grammar and reading. (F;S)
- FOLA 508. French Civilization** **Credit 3(3-0)**  
 This course is a general survey of the history of France, with emphasis on the social, political and economic development designed to give students an understanding of present conditions and events. A detailed study of such French institutions as art, music, and education is included. This course is also offered in conjunction with reports of collateral readings. (F;S)
- FOLA 515. Structural Linguistics in the Teaching of French** **Credit 3(3-0)**  
 This course applies structural linguistic forms, doctrine and methodology to the teaching of French historical development of the French language. Presentation of dialogues and drills in French will be included. Emphasis is on phonemics, morphology and syntax. (F;S)
- FOLA 520. Selected Tales, Legends and Proverbs of Francophone Africa** **Credit 3(3-0)**  
 This course on the francophone tales of Africa will introduce the student to African culture and oral literary thoughts. Based on the analysis of these tales and proverbs, students will gain a better understanding of the African family structure and social organization. The course is conducted in French. Prerequisite: FOLA 410 or consent of instructor. (F;S)
- FOLA 521. Selected Poetry and Prose from Francophone Writers of Central Africa** **Credit 3(3-0)**  
 The study of poetry and prose from francophone writers of Central Africa is an advanced francophone course. Its goal is to give the students a solid knowledge through analysis of

poetry and prose of African lyricism, politics, and philosophical themes. The course is conducted in French. Prerequisites: FOLA 410 and 411. (F;S)

**FOLA 524. Seminar in Foreign Languages** **Credit 3(3-0)**

This course includes readings and special topics in French and Spanish. Presentations from students, faculty and guest lectures will also be included. Papers showing research techniques in literary studies are required of all candidates for a degree with concentrations in French or Spanish. Prerequisite: FOLA 320 or FOLA 300. (F;S)

**FOLA 528. Independent Study in Foreign Languages** **Credit 3(3-0)**

This course includes independent study and research in a special area of the foreign language. Prerequisite: FOLA 320 or FOLA 300. (F;S)

**Advanced Undergraduate**

**FOLA 602. Second Language Teaching and Learning** **Credit 3(3-0)**

This course includes theoretical positions and practices in second language teaching and learning. Special features of the course will be practice, activities, and strategies for teaching and learning a new language and for developing the proficiency level(s) in a second language. Prerequisite: Junior standing. (F;S)

**FOLA 603. Oral Course for Teachers of Foreign Languages** **Credit 3(3-0)**

This course is designed for teachers of foreign languages to improve pronunciation. (F;S)

**FOLA 606. Research in the Teaching of Foreign Languages** **Credit 3(3-0)**

This course is open to students who are interested in undertaking the study of a special problem in the teaching of a foreign language. (F;S)

**FOLA 607. French Literature of the Seventeenth Century** **Credit 3(3-0)**

This course presents Classicism through masterpieces of Corneille, Racine, Moliere and other authors of the "Golden Period" in French letters. (F;S)

**FOLA 608. French Literature in the Eighteenth Century** **Credit 3(3-0)**

This course presents the life and works of Montesquieu, Voltaire, and Rousseau as the main emphasis. (F;S)

**FOLA 609. French Literature of the Nineteenth Century** **Credit 3(3-0)**

The great literary currents of the nineteenth century Romanticism and Realism will be studied. (F;S)

**FOLA 610. The French Theatre** **Credit 3(3-0)**

This course is a thorough study of the French theatre from the Middle Ages to the present. (F;S)

**FOLA 612. The French Novel** **Credit 3(3-0)**

The novel from the Seventeenth Century to the present will be studied. (F;S)

**FOLA 614. French Syntax** **Credit 3(3-0)**

This course is designed to teach grammar on the advanced level. (F;S)

**FOLA 616. Contemporary French Literature** **Credit 3(3-0)**

This course deals with the chief writers and literary currents from 1900 to the present. (F;S)

**FOLA 618. Selected Afro-French Poets** **Credit 3(3-0)**

This course is the study and analysis of the most representative works of Afro-French poets of South America, Africa and the Caribbean. Prerequisite: FOLA 410, 411, 412 or consent of instructor. (F;S)



## SPANISH

### Undergraduate

**FOLA 104. Elementary Spanish I\*** **Credit 3(3-0)**

This is a course for beginners, which emphasizes the four language skills of listening, speaking, reading, and writing. The course is conducted in Spanish. (F;S)

**FOLA 105. Elementary Spanish II\*** **Credit 3(3-0)**

This course is a continuation of Elementary Spanish 104 and introduces students to more advanced grammar. There is emphasis on improving the four skills taught in Spanish 104. The course is conducted in Spanish. Prerequisite: FOLA 104, Spanish Placement Test, or consent of instructor. (F;S)

**FOLA 320. Intermediate Spanish I\*** **Credit 3(3-0)**

This course is a continuation from Elementary Spanish 105. There is a review of grammar and introduction to more advanced grammar. The course places emphasis on improving the skills taught in FOLA 105. It is conducted in Spanish and students begin to read essays and short stories in Spanish. Prerequisite: FOLA 105, Spanish Placement Test, or consent of instructor. (F;S)

**FOLA 321. Intermediate Spanish II\*** **Credit 3(3-0)**

This course is a continuation of FOLA 320. There is a review and completion of Spanish grammar. The course places emphasis on improving the four skills of reading, listening, speaking and writing. Students will also read short stories and essays. The course is conducted in Spanish. Prerequisite: FOLA 320, or equivalent, or consent of instructor. (F;S)

**FOLA 401. Spanish for Reading Comprehension** **Credit 3(3-0)**

This course includes the development of skills needed for reading competency and interpretation; preparation for Spanish reading proficiency examination, emphasis placed on vocabulary development; mastery of all aspects of noun/pronoun character and modifiers; knowledge of tense, mood and form of verb structure; reading comprehension analysis and evaluation of selected passages. Readings will be in such areas as the humanities, the sciences, social and natural sciences and other areas of students' interests. Prerequisite: FOLA 321. (F;S)

**FOLA 404. Afro-Hispanic Literature** **Credit 3(3-0)**

The course is designed to provide the student with a general knowledge of Afro-Hispanic literature in its many manifestations throughout Spanish America and the Caribbean. Representative texts will be read within the context of the sociohistoric and cultural influences that have shaped the black experience in Spanish America. The course is conducted in Spanish. Prerequisite: FOLA 321 or equivalent. (F;S)

**FOLA 440. Phonetics** **Credit 3(3-0)**

This course includes a systematic analysis of speech sounds, and the operation of phonetic laws. Prerequisite: Spanish 105 or equivalent. (F;S)

**FOLA 441. Intermediate Spanish Conversation** **Credit 3 (3-0)**

This course provides practice and drill in oral Spanish based principally on topics of current interest and culture. It gives an introduction to more advanced listening and comprehensive practices. The course is conducted in Spanish. Prerequisite: FOLA 320 or consent of instructor. This course may be taken simultaneously with FOLA 321. (F;S)

**FOLA 442. Introduction to Spanish Literature** **Credit 3(3-0)**

This course emphasizes readings of representative authors of Spain. (F;S)

**FOLA 450. La Cultura Hispanica** **Credit 3(3-0)**

This course covers the significant elements of Hispanic Civilization; geography, history, literature, and economics of the Spanish people. (F;S)

*\*Students are required to purchase supplemental materials for this course.*



**FOLA 451. Survey of Spanish Literature I****Credit 3(3-0)**

This course is a survey of Spanish literature from the Cid through the Golden Age with assigned readings and reports. (F;S)

**FOLA 452. Survey of Spanish Literature II****Credit 3(3-0)**

This course is a survey of Spanish literature from the seventeenth century to the present. (F;S)

**FOLA 453. Americanos: Latino Culture in the United States****Credit 3(3-0)**

This course studies Hispanic Americans as an increasingly important cultural, political, and economic force in the United States. Topics to be considered include reasons for emigrating, U.S. immigration policy, assimilation, discrimination, affirmative action, bilingual education, alliance and conflict with African Americans in political and economic arenas, and the Latin "boom" in the arts. The class will be conducted in Spanish, with an emphasis on discussion and composition. Prerequisite: FOLA 321 or consent of instructor. (F;S)

**FOLA 455. Syntax****Credit 3(3-0)**

This course involves systematic study of Spanish grammar with conversational and other exercises based on contemporary authors. (F;S)

**FOLA 460. Introduction to Spanish for Business****Credit 3(3-0)**

This course is designed to enhance the student's ability to relate to a business environment in an increasingly important commercial language both nationally and internationally. It will introduce the student to the vocabulary and discourse related to business topics and functional areas as well as to the cultural setting of business. These topics will be interwoven with a grammar review taught in a business context. The course will be conducted in Spanish and will include some translating activities. Prerequisite: FOLA 321. (F;S)

**FOLA 461. Advanced Spanish for Business****Credit 3(3-0)**

This course is designed to complete and complement FOLA 460. It will provide the student with a solid foundation in the vocabulary and discourse related to business topics and functional areas. It will further develop the understanding of cultural settings in business. The course will be conducted in Spanish and will include some translating and interpreting activities. Prerequisite: FOLA 460. (F;S)

**FOLA 524. Seminar in Foreign Languages****Credit 3(3-0)**

This course includes readings and special topics in French and Spanish. Presentations from students, faculty and guest lectures will also be included. Papers showing research techniques in literary studies are required of all candidates for a degree with concentrations in French or Spanish. Prerequisite: FOLA 320 or FOLA 300. (F;S)

**FOLA 528. Independent Study in Foreign Languages****Credit 3(3-0)**

This course includes independent study and research in a special area of the foreign language. Prerequisite: FOLA 320 or FOLA 300. (F;S)

**GERMAN****FOLA 102. Elementary German I****Credit 3(3-0)**

The fundamentals of pronunciation and grammar will be studied. Attention is given to prepared and sight translations and vocabulary building. (F;S)

**FOLA 103. Elementary German II\*****Credit 3(3-0)**

This course continues the emphasis on grammar, vocabulary building, prepared and sight translations. Maximum attention given to graded readings in German prose and drama. (F;S)

**FOLA 202. German Readings in the Natural Social Sciences and Technical Field****Credit 3(3-0)**

This course includes individualized readings in the natural, social sciences and technical fields for students desirous of developing competency in German. (F;S)

*\*Students are required to purchase supplemental materials for this course.*

**FOLA 204. Introduction to Business German****Credit 3(3-0)**

This course will introduce students to the German language of everyday business dealings. Emphasis will be placed on those aspects that have an impact on the average citizen such as daily business dealings, social and environmental problems, and the dependence of the population on international trade. Prerequisites: FOLA 102 and 103. (F;S)

**FOLA 420. Conversational German****Credit 3(3-0)**

This course includes intensive practice in everyday German. Prerequisite: German 102, 103, or approval of instructor. (F;S)

**FOLA 422. Intermediate German I****Credit 3(3-0)**

This course is open to students who have completed German 102 and 103. The students read a cross-section of the simpler writings in German literature and German newspapers. (F;S)

**FOLA 423. Intermediate German II****Credit 3(3-0)**

This course is a continuation of FOLA 422. Readings from German literature are included. (F;S)

**FOLA 424. Afro-German Studies****Credit 3(3-0)**

Afro-German Studies will explore and discuss manuscripts either written by or written about Africans living in Germany and manuscripts written about or by Germans living in Africa. The manuscripts will be older and written in the older German script: some of the manuscripts will be current and modern. Prerequisites: FOLA 422 and FOLA 423. (F;S)

**FOLA 427. Survey of German Literature****Credit 3(3-0)**

This course provides general introduction to the study of German literature. It is intended to give an overall picture of German literature and an opportunity to read outstanding works not offered in other German courses. (F;S)

**RUSSIAN****FOLA 106. Elementary Russian I\*****Credit 3(3-0)**

This is an elementary course for beginners which consists of grammar translation, practice in pronunciation and limited use of the spoken language. (F;S)

**FOLA 107. Elementary Russian II\*****Credit 3(3-0)**

This course is a continuation of Elementary Russian 106. Attention is given to more advanced grammar. Reading in Russian is stressed. Prerequisite: FOLA 106. (F;S)

**FOLA 310. Literature of American Communism and Soviet Russia****Credit 3(3-0)**

This course surveys literature of communism from the depression era through present day in the United States and literature of Soviet Russia. Course materials will focus on autobiographies of the period, with an emphasis upon the black experience with communism in both the United States and Soviet Russia. The course is designed to give students a broader cultural understanding of how Americans and Russians view one another. The course is taught in translation. (F;S)

**FOLA 311. Technical Russian****Credit 3(3-0)**

This course is designed to teach basic reading and translation skills as well as vocabulary building, with an emphasis on the sciences/engineering. Course readings will be selected based on enrolled students' majors. The course is taught in translation. Prerequisites: FOLA 106 and 107. (F;S)

**FOLA 322. Intermediate Russian I****Credit 3(3-0)**

This course is a continuation of basic Russian grammar. There is emphasis on reading, composition, and conversation. Prerequisite: FOLA 107. (F;S)

*\*Students are required to purchase supplemental materials for this course.*

**FOLA 323. Intermediate Russian II****Credit 3(3-0)**

This course is a continuation of Intermediate Russian I. Students will analyze well-known Russian works in order to develop a competency in Russian. Emphasis will also be placed on conversation and composition. Prerequisite: FOLA 322. (F;S)

**JAPANESE****FOLA 108. Elementary Japanese I\*****Credit 3(3-0)**

This is an elementary course for beginners, which consists of practice in pronunciation and usage of the spoken language. This course is designed to offer the basic foundation for the development of listening comprehension and speaking skills, and also provides an introduction into the Japanese culture. (F;S)

**FOLA 109. Elementary Japanese II****Credit 3(3-0)**

This course is a continuation of Elementary Japanese I. The focus will be to examine the elementary Japanese alphabet called Hiragana through reading and writing. Prerequisite: FOLA 108. (F;S)

**FOLA 308. Intermediate Japanese I.****Credit 3(3-0)**

This course focuses on development of conversational skills, with practice of reading skills and Japanese characters. Speaking and listening practice will be aided through the usage of videotapes and other media. (F;S)

**FOLA 309. Intermediate Japanese II \*****Credit 3(3-0)**

This course is a continuation of FOLA 308. In addition to practice to improve oral proficiency, this course will reinforce reading and writing skills, with emphasis on composition and oral presentation. (F;S)

**PORTUGUESE****FOLA 110. Elementary Portuguese I \*****Credit 3(3-0)**

This is a course for beginners, which emphasizes the four skills of listening, speaking, reading, and writing. The course is conducted in Portuguese. (F;S)

**FOLA 111. Elementary Portuguese II \*****Credit 3(3-0)**

This course is a continuation of Elementary Portuguese I and introduces students to more advanced grammar. There is emphasis on improving the four skills taught in Elementary Portuguese I. The course is taught in Portuguese. (F;S)

**FOLA 314. Intermediate Portuguese I\*****Credit 3(3-0)**

This course is a continuation from Elementary Portuguese II. There is a review of grammar and introduction to more advanced grammar. The course places an emphasis on improving the skills taught in Elementary Portuguese II. The course is taught in Portuguese, and students begin reading essays and short stories in Portuguese. (F;S)

**FOLA 315. Intermediate Portuguese II\*****Credit 3(3-0)**

This course is a continuation of Intermediate Portuguese I. There are reviews and completion of Portuguese grammar. The course places an emphasis on improving the four skills of reading, listening, speaking, and writing. Students will also read short stories and essays. The course is conducted in Portuguese. (F;S)

*\*Students are required to purchase supplemental materials for these courses.*

## DIRECTORY OF FACULTY

- Brigitte E. Archibald** ..... **Professor**  
 B.A., The King's College; M.A., Middlebury College; Ph.D., University of Tennessee
- José Alberto Bravo de Rueda** ..... **Assistant Professor**  
 B.A., Pontificia Universidad Católica; M.A., Ph.D., University of Maryland - College Park
- Guillermo A. Cifuentes** ..... **Adjunct Assistant Professor**  
 B.A., Libre University; M.A., J.D., University of Carabobo, Valencia, Venezuela
- Nita M. Dewberry** ..... **Associate Professor and Associate Dean**  
 B.A., North Carolina State University; M.A., Ph.D., University of North Carolina at Chapel Hill
- Carolyn R. Durham** ..... **Associate Professor and Chairperson**  
 B.A., Drew University; M.A., Ph.D., Rutgers University
- Mark Groundland** ..... **Instructor**  
 B.A., M.A., University of Delaware
- Chinedum Emmanuel Ikegwu** ..... **Associate Professor**  
 B.A., University of the District of Columbia; M.A., Antioch School of Law; Ph.D. Howard University
- Elie Mbumina** ..... **Lecturer**  
 B.S., Winston-Salem State University; M.S., North Carolina A&T State University
- Pedro Niño** ..... **Lecturer**  
 B.A., Universidad Central de Venezuela; M.A., Universidad Santa Maria



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## Department of History

<http://www.ncat.edu/~history/>

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Olen Cole, Jr., Chairperson

### OBJECTIVES

The Department of History offers students a knowledge of the past which enables them to better understand today's world and to prepare for the future. The department also helps students develop skills in research, analysis, decision-making, and communication. These skills prepare students for successful careers, constructive participation in civic affairs, and lifelong learning. In short, the department of history emphasizes the personal development of each student.

The specific objectives of the History Department are: 1) to contribute to the general education of students by providing the historical, geographical, and philosophical background for studying the arts, the sciences, and technical subjects; 2) to give historical content and professional skills to students preparing for careers in fields such as education, law, religion, international affairs, social service, journalism, history, or government; 3) to offer a curriculum which allows students to pursue the history of all areas of the world; 4) to offer a course of study leading to the Baccalaureate Degree in history or history education; 5) to offer a course of study leading to the Master of Science Degree in Education with a concentration in history; and, 6) to provide instruction for students preparing for doctoral programs.

In carrying out its aims and objectives, the History Department offers a broad range of courses in history as well as courses in geography and philosophy. To help ensure student success the Department assigns each student major to an advisor and it is particularly important that students consult their advisors when planning their educational programs. The Department also offers students a variety of extracurricular opportunities to enrich their college experiences. These activities include the *History Magazine*, *Phi Alpha Theta International Honor Society in History*, and numerous public lectures. Finally, the Department participates in the University Honors Program, which enables outstanding students to work closely with faculty members on special course and research assignments.

### DEGREES OFFERED

History – Bachelor of Arts

History (Africana History) – Bachelor of Arts

History, Secondary Education – Bachelor of Science

History Education – Master of Science\*

\* See the *Graduate School Bulletin*

### GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the History Department is based upon the general admission requirements of the University.

### DEPARTMENTAL REQUIREMENTS

History Major - A student in the history major must complete 124 semester hours of University courses. Included in the 124 hours are 45 hours in history courses (24 hours at the 400 level or above; remaining hours must be at the 200 level or above) and 18 hours in the social sciences. A minimum grade of "C" must be achieved in these history and social science courses. Students who wish to specialize in the history of Africa and African-Americans may pursue the special concentration in Africana history within the history major.

Teaching Major in History - The Teaching Major in history requires 128 semester hours of University courses. Included in the 128 semester hours are 18 hours in history courses at the 400 level or above (remaining hours must be at the 200 level or above) and 18 hours in the social sciences. This major also includes 25 hours of education courses and field experience as a student teacher. Students in this major must earn at least a "C" in all history, social science, general education, and professional education courses.

Students in the history education program are provided an opportunity to:

- Become knowledgeable about man's past experiences;
- Study the history of major world civilizations and understand the impact of various groups, institutions, and nations on global development;
- Understand the social, political, economic, and cultural forces at work in contemporary societies;
- Become more sensitive to the relationships between history and the other social science disciplines;
- Develop an understanding of the nature of history and of the scientific methodology of historical research;
- Develop competencies essential for effective teaching of history and social studies in secondary schools;
- Develop proficiency in using computer software and appropriate peripheral devices to enhance instruction;
- Qualify for initial certification in history or social studies in North Carolina; and
- Prepare for further study at the graduate level and understand the need for life-long learning.

The Minor in History - Students desiring to minor in history must complete 18 semester hours in history at the 200 level or above including HIST 204, 205, 403 and 404.

The Minor in African and African-American History - The minor in African and African-American History consists of 18 semester hours of history courses distributed as follows:

**Required Courses: 12 hours**

HIST 201, 202, 215, and 216

**Elective Courses: 6 hours to be selected from the following:**

HIST 272, 273, 320, 412, 416, 425, 455, 615, 616, 617, and 628

**The Minor in Museum Studies** - The minor in museum studies consists of 18 semester hours of courses as follows:

HIST 270, 271, 272, 273, 320, and 321

## **ACCREDITATION**

All teacher education programs are accredited by the National Council for the Accreditation of Teacher Education and are approved by the state department of public instruction.

## **CAREER OPPORTUNITIES**

The undergraduate degree program in history leads to careers in journalism, business, archives and museums, international affairs, and government service, among others. It also prepares students for law school, theological seminary, and other graduate and professional school programs.

The undergraduate and graduate education majors prepare students to teach history or the social sciences in secondary schools. Businesses also find that teacher education majors make good human relations specialists, personnel directors, technical writers, sales managers, directors of training programs, and administrators.

**REQUIRED MAJOR COURSES FOR HISTORY**

HIST 201	HIST 205	HIST 404
HIST 202	HIST 250	HIST 599
HIST 204	HIST 403	

**CURRICULUM GUIDE FOR HISTORY**

**FRESHMAN YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 100 or CHEM 100 and 110	4	BIOL 100 or CHEM 100 and 110	4
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST 100	3	HIST 101	3
PHED 101or 200	<u>1-2</u>	PHED 101 (if PHED 200 not taken)	0-1
	14-15	SPCH 250	<u>3</u>
			16-17

**SOPHOMORE YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 204	3	HIST 205	3
HIST 250	3	POLI 200 or 210	3
PSYC 320	3	ECON 305, SOCI 302, or HIST 400 <sup>1</sup>	3
FOLA	3	FOLA	3
ENGL 200	3	ENGL 201	<u>3</u>
PHIL 260, 261, or 262	<u>3</u>		15
	18		

**JUNIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 403	3	HIST 404	3
HIST 201	3	HIST 202	3
Social Science Elective <sup>2</sup>	6	Free Electives <sup>3</sup>	3
ECON 300 or 301	<u>3</u>	HIST Electives <sup>4</sup>	3
	15	HIST Elective (Non-Western) <sup>5</sup>	<u>3</u>
			15

**SENIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Social Science Elective <sup>2</sup>	3	Free Electives <sup>3</sup>	6
HIST Electives <sup>4</sup>	9	HIST Electives <sup>4</sup>	6
Free Electives <sup>3</sup>	<u>3</u>	HIST 599	<u>3</u>
	14-15		15

Total Credit Hours: 124

<sup>1</sup> HIST 400 will count as a Social Science course for History majors who take it instead of ECON 305 or SOCI 302.

<sup>2</sup> 9 hrs. – Students may take any Geography, Political Science, Sociology, or Anthropology courses for which they meet the prerequisites.

<sup>3</sup> 12 hrs. – Students may take any courses offered at the University for which they meet the prerequisites.

<sup>4</sup> 18 hrs. of which 15 hrs. must be at the 400 level or above. Choose from HIST 203, 209, 215, 216, 220, 225, 230, 270, 271, 272, 273, 300, 302, 305, 306, 307, 312, 320, 321, 332, 334, 340, 351, 355, 400, 401, 402, 404, 405, 407, 410, 412, 415, 416, 417, 418, 420, 425, 430, 431, 432, 433, 435, 440, 450, 451, 455, 460, 461, or 477. Seniors may also choose from HIST600, 603, 605, 606, 607, 610, 615, 616, 617, 618, 619, 620, 621, 625, 626, 628, 629, 630, or 633

<sup>5</sup> 3 hrs. – Choose from HIST 215, 216, 417, 418, 320, 430, 431, 332, 412, or 444. Seniors may also choose from HIST 616, 617, 618, 619, 620, or 621.

## CURRICULUM GUIDE FOR HISTORY (AFRICANA HISTORY)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 100 or CHEM 100 and 110	4	BIOL 100 or CHEM 100 and 110	4
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST 100	3	HIST 101	3
PHED 101 or 200	<u>1-2</u>	PHED 101 (if PHED 200 not taken)	0-1
	14-15	SPCH 250	<u>3</u>
			16-17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 204	3	HIST 205	3
HIST 250	3	POLI 200 or 210	3
PSYC 320	3	ECON 305, SOCI 302, or HIST 400 <sup>1</sup>	3
FOLA	3	FOLA	3
ENGL 200	3	ENGL 201	<u>3</u>
PHIL 260, 261, or 262	<u>3</u>		15
	18		

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 403	3	HIST 404	3
HIST 201	3	HIST 202	3
Social Science Electives <sup>2</sup>	6	Free Electives <sup>3</sup>	3
ECON 300 or ECON 301	<u>3</u>	HIST Electives <sup>4</sup>	<u>6</u>
	15		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Free Electives <sup>3</sup>	3	Free Electives <sup>3</sup>	6
Social Science Electives <sup>2</sup>	3	HIST 599	3
HIST 215	3	HIST 216	3
HIST Electives <sup>4</sup>	<u>6</u>	HIST Electives <sup>4</sup>	<u>3</u>
	15		15

Total Credit Hours: 124

<sup>1</sup> HIST 400 will count as a Social Science course if taken in place of ECON 305 or SOCI 302.

<sup>2</sup> 9 hrs. - Students may choose from POLI 220, POLI 445, POLI 447, or SOCI 314.

<sup>3</sup> 12 hrs.- Students may take any courses offered at the University for which they meet the prerequisites.

<sup>4</sup> 15 hrs. of which 6 hrs. must be at the 400 level or above. Choose from HIST 203, 272, 273, 317, 320, 355, 400, 404, 412, 416, 425, 433, 440, 444, 451 or 455. Seniors may choose from HIST 615, 616, 618, 619, 621, 628, or 629.

### REQUIRED COURSES FOR HISTORY, SECONDARY EDUCATION

HIST 201	HIST 250
HIST 202	HIST 403
HIST 204	HIST 404
HIST 205	HIST 599



# CURRICULUM GUIDE FOR HISTORY, SECONDARY EDUCATION

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 100 or CHEM 100 and 110	4	EASC 201 or PHYS 110 and 111	3
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST 100	3	SPCH 250	3
PHED (one course 101-118)	1	HIST 101	<u>3</u>
CUIN 101	1		14-15
CUIN 102	<u>2</u>		
	16-17		

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 204	3	HIST 205	3
HIST 250	3	POLI 200	3
PSYC 320	3	PHIL 260, 261, or 262	3
FOLA	3	CUIN 301	2
ENGL 200	3	FOLA	3
PHED 200	<u>2</u>	ENGL 201	<u>3</u>
	17		17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HIST 403	3	HIST 404	3
HIST 201	3	SOCI 100	3
ECON 300	3	CUIN 436	3
CUIN 400	3	ECON 301	3
GEOG 210	3	HIST 202	3
HIST Electives <sup>1</sup>	<u>3</u>	HIST Elective (Non-Western) <sup>2</sup>	<u>3</u>
	18		18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 536	3	CUIN 500	3
HIST Electives <sup>1</sup>	3	CUIN 560	6
SOCI 200	3	CUIN 624	<u>3</u>
HIST 599	3		12
Free Electives <sup>3</sup>	<u>2-3</u>		
	14-15		

Total Credit Hours: 128

<sup>1</sup> 6 hrs. which must be at the 400 level or above. - HIST 400, 401, 402, 404, 405, 407, 410, 412, 415, 416, 417, 418, 420, 425, 430, 431, 432, 433, 435, 440, 444, 450, 451, 455, 460, 461, or 477. Seniors may also choose from HIST 600, 603, 605, 606, 607, 610, 615 616, 617, 618, 619, 620, 621, 625, 626, 628, 629, 630, 631, or 633.

<sup>2</sup> 3 hrs. - HIST 417, 418, 431, 432, 412, or 444. Seniors may also choose from History 616, 617, 618, 619, 620, or 621.

<sup>3</sup> 2-3 hrs. - Students may take any course offered at the University for which they meet the prerequisites.

## COURSE DESCRIPTIONS IN HISTORY

### **HIST 100. History of World Civilizations-Part I** **Credit 3(3-0)**

This course is a survey of the social, political, economic, religious, and cultural developments in world civilizations from the beginnings in the ancient world through the 16th century. (F;S;SS)

### **HIST 101. History of World Civilizations-Part II** **Credit 3(3-0)**

This course is a continuation of the social, political, economic, religious, and cultural developments in world civilizations from the 17th century to the present. (F;S;SS)

### **HIST 201. African-American History to 1877** **Credit 3(3-0)**

This is a survey of the history of African-Americans in the United States from the African background through the Civil War. The emphasis is on American slavery, the abolition movement, the free African-American community, Civil War, Emancipation, and Reconstruction. (F;S;SS)

### **HIST 202. African-American History Since 1877** **Credit 3(3-0)**

This course emphasizes African-American leadership organizations, achievement, and the struggle of African-Americans for equality in the United States since 1877. (F;S;SS)

### **HIST 203. North Carolina A&T State University: A Legacy of Social Activism and Aggie Pride** **Credit 3(3-0)**

This course examines establishment and evolution of North Carolina A&T State University within the context of the development of American higher education. With the use of various primary and secondary sources, students will gain a greater knowledge of the development and growth of the institution during major historical periods by examining past and present leaders, facilities, programs, and accomplished alumni. Attention will be given to the impact of the University and its alumni on political, social, economic, and intellectual development at the local, national, and international levels. Emphasis is placed on the institution's and activists' impact on the Civil Rights movement and the pivotal role that each played. The course will also explore relevant contemporary issues and the institution's global perspective in the new millennium. (F;S;SS)

### **HIST 204. U.S. History From 1492-1877** **Credit 3(3-0)**

This course examines the basic diplomatic, political, economic and sociocultural forces in the formation and development of the United States to 1877. Emphasis is placed upon political developments within a broad economic, social and cultural context. (F;S;SS)

### **HIST 205. U.S. History Since 1877** **Credit 3(3-0)**

This course continues the examination of basic diplomatic, political, economic and sociocultural forces in the development of the United States since 1877. Study of these major historical elements is pursued in an effort to help students to better understand the problems and challenges of contemporary American life, both domestic and foreign. (F;S;SS)

### **HIST 209. The American Military Experience** **Credit 3(3-0)**

This course is designed primarily to enable the student to understand better the role played by the armed forces in American society today through a study of the origins and development of military institutions, traditions, and practices in the United States, from 1775 to the present. (DEMAND)

### **HIST 215. History of Africa to 1800** **Credit 3(3-0)**

This course is a general survey of the history of Africa to 1800. Major areas of study include the genesis of man in Africa, the ancient world, early East and West civilizations, and the coming of Europe. (F)

### **HIST 216. History of Africa Since 1800** **Credit 3(3-0)**

This course is a general survey of the history of Africa since 1800. Major areas of study include the slave trade, the underdevelopment of Africa, Western imperialism and the African partition, and the growth of nationalism. (S)

**HIST 220. History of Science and Technology** **Credit 3(3-0)**

This course is a survey of major scientific discoveries and technological innovations since the Scientific Revolution. Special attention will be paid to the Newtonian mechanistic worldview, theories of evolution, relativity, industrial revolution, medical advances, nuclear energy, computers and robotics. The social, economic, and ethical impact of modern scientific and technical discoveries will also be discussed. **(DEMAND)**

**HIST 225. America in the 1960s** **Credit 3(3-0)**

This course surveys and analyzes the various movements which made the 1960s one of the most important and tumultuous decades in American history. Special emphasis will be placed on the civil rights movement, opposition to the Vietnam War, environmentalism, youth culture, and feminism. Attention will also be given to the continuing influence of the 1960s on the development of American society. **(DEMAND)**

**HIST 230. History of Modern Medicine** **Credit 3(3-0)**

This course surveys the development of modern medical theories and practices, the professional development of physicians and nurses, the impact of technology on health care, the rise of hospitals, the intersections between society and medicine, factors affecting wellness, and the current problems facing the American health care system. Attention will also be given to the ethical dilemmas faced by doctors and nurses in this age of high tech health. **(DEMAND)**

**HIST 250. The Nature, Study, and Writing of History** **Credit 3(3-0)**

The course includes material and presentations leading to an understanding of the basic nature of history, how to study it, methods and techniques in researching and writing it, basic computer and quantification skills, and more summarily, historiography and philosophies of history. **(F;S)**

**HIST 270. Introduction to Museums** **Credit 3(3-0)**

This course introduces the student to the collecting and educational functions of the museum. Students will learn how museum professionals research, interpret and exhibit the holdings of a museum for the benefit of the community. Students will gain experience in developing their own exhibits. Students will also have the opportunity to visit local historical projects, and museums to study how these agencies carry out mandated duties. **(DEMAND)**

**HIST 271. Museum Practice and Collection Maintenance** **Credit 3(3-0)**

This course introduces students to the duties of museum registrars, curators, conservationists, and administrators. Students will learn how to catalog and preserve the items in a museum's collection. Students will also visit other local museums to gain greater knowledge of museum operations. **(DEMAND)**

**HIST 272. Oral History** **Credit 3(3-0)**

This course will introduce students to the ethics and techniques of collecting, preserving, and interpreting oral interviews. They will gain practice in using oral evidence, along with original primary sources and photographs, by exploring the role, impact, and consequences of race, gender and class on American history. **(DEMAND)**

**HIST 273. African-American History and Museum Collecting** **Credit 3(3-0)**

Students will develop collections of materials and create exhibits on themes in African American history, especially in North Carolina. Students will learn how to preserve and catalog photographs, documents, and archival materials. They will also be introduced to the theory and ethics of historical collecting, including the criteria, which should be used to determine if an item is of museum quality and historical importance. Prerequisite: HIST 202 or permission of instructor. **(DEMAND)**



**HIST 300. Ancient History****Credit 3(3-0)**

This course is a history of civilizations from the beginnings in the Near East and Egypt through Hellenism and the Roman Empire. (DEMAND)

**HIST 302. The Pre-Modern West****Credit 3(3-0)**

This course is a survey of major developments in the Mediterranean and Western Europe from the origins of the Roman Empire through the end of the Middle Ages. (DEMAND)

**HIST 305. Socialism Since Karl Marx****Credit 3(3-0)**

This course analyzes the transformation of socialist thought and practice since the time of Marx. Special attention will be devoted to Marxist doctrines, nineteenth century Revisionism, Social Democracy, and twentieth century Communism. (DEMAND)

**HIST 306. History of Women Since 1800****Credit 3(3-0)**

This course will trace the changes in female self-images and roles since the early 19th century in Europe and the United States. It will concentrate upon the growth of new educational and occupational opportunities for women, changing concepts of motherhood, and the rise of female protest movement. (DEMAND)

**HIST 307. The Historical Origins of Environmental Crises****Credit 3(3-0)**

This course will deal with man's changing philosophical and technological relationship with his natural environment since the start of the Industrial Revolution. (DEMAND)

**HIST 312. History of Religions****Credit 3(3-0)**

This is a course that surveys the origin and development of the traditional religions of India and China and the three "Religions of the Book": Judaism, Christianity, and Islam. (DEMAND)

**HIST 320. African History Through Art and Archaeology****Credit 3(3-0)**

Drawing heavily on the holdings of the Mattye Reed African Heritage Center and other museums, this course will demonstrate how to use material culture collections of art, artifacts, and archaeological findings to document and interpret African history. (DEMAND)

**HIST 321. Cultural History, Ethnicity, and Ethnographic Collections in America****Credit 3(3-0)**

By drawing upon the ethnographic and multicultural collections of museums in North Carolina, students will become familiar with the role that museums can play in documenting and interpreting the culturally diverse history of the United States. (DEMAND)

**HIST 332. The Modern Middle East****Credit 3(3-0)**

This course will focus on the Middle East from the mid 19th century to the present. Areas of study will include the nature of Islamic society; the rise of nationalism and independence movements; the creation of the state of Israel; and the Arab-Israeli conflict. (DEMAND)

**HIST 334. Honors in History****Credit 3(3-0)**

This course includes intensive reading and study or research in the field of history for departmental majors with a 3.0 average. (DEMAND)

**HIST 340. History of England****Credit 3(3-0)**

This course concentrates on English history since 1688. Special attention is given to the following topics: The Glorious Revolution, industrialization, imperialism, decolonization, Victorianism, Ireland, and contemporary English society. (DEMAND)

**HIST 351. African-Americans in the American West****Credit 3(3-0)**

This course covers African-American contributions to the development of the western United States. Emphasis will be on reading, research, and discussion of the African-American experience. (DEMAND)



**HIST 355. African-American Historical Perspectives on Africa** **Credit 3(3-0)**

This course is a study of the historical relationship of African-Americans with Africa, stressing the political, economic, and cultural significance of the continent in African-American history and thought. Missionary, repatriation, and Pan-African movements will be analyzed, as well as the evolving image of Africa in African-American popular culture. (DEMAND)

**HIST 400. Computers in the Study and Teaching of History** **Credit 3(3-0)**

This course enables students to use computers to research historical topics and prepare materials for distribution both in print and electronically. Students will learn to find, access, and critically evaluate the quality of on-line databases and the Internet sites of libraries, archives, and museums. They will also interact with scholars and each other using electronic mail, electronic message boards, and Usenet news. (DEMAND)

**HIST 401. Old Testament History and Literature** **Credit 3(3-0)**

This course is a survey of the books sacred to Judaism, Christianity, and Islam commonly called the Old Testament, in the context of the history of the people of Israel who composed them. (DEMAND)

**HIST 402. The Rise of Christianity** **Credit 3(3-0)**

This course is a historical study of the origins and development of the Christian Church from its beginnings to the end of the ancient world (around 476 A.D.). The political, social, economic, intellectual, and religious environment will be considered equally along with the internal development of Christian institutions, beliefs, and practices. (DEMAND)

**HIST 403. Early Modern Europe: Renaissance to 1815 (formerly HIST 303)** **Credit 3(3-0)**

This course is a survey of major trends in the development of early modern Europe. Topics to be discussed include Renaissance, Reformation, Scientific Revolution, Enlightenment, Absolutism, and the French Revolution. (F)

**HIST 404. Modern Europe Since 1815 (formerly HIST 304)** **Credit 3(3-0)**

This course is a survey emphasizing main trends in European development including political and social impact of the French Revolution, Industrial Revolution, authoritarianism vs. liberalism, church vs. state, nationalism, imperialism, World Wars I and II, Communism, Nazism, and present-day Europe. (S)

**HIST 405. African-American Religious History (formerly HIST 404)** **Credit 3(3-0)**

This course surveys the origins and development of religious beliefs and organizations among African-Americans. Topics that will be studied include the rise of separate Christian denominations, African antecedents, the political and social role of the African-American church, and the appearance of Islamic and other religious groups. The relationships of religion to African-American reform and protest movements will be highlighted. (DEMAND)

**HIST 407. American Diplomatic History Since 1900** **Credit 3(3-0)**

American foreign policy and diplomacy from the Spanish-American War to the present will be covered in this course. Emphasis is on the impact of foreign policy upon domestic (U.S.) society and the growing involvement of the U.S. in international relations. Students are encouraged to understand fully and think critically about America's role in the world. (DEMAND)

**HIST 410. American Constitutional History** **Credit 3(3-0)**

The development of American constitutionalism from English origins to the present will be covered in this course. Emphasis on the development of separation of powers, states' rights, the Supreme Court, and the sectional controversy, economic regulations, and the modernization of the Bill of Rights, especially problems of desegregation, free speech, obscenity and criminal justice. (DEMAND)

**HIST 412. Modernization in Africa from 1920 to the Present** **Credit 3(3-0)**

This course is the study of African development since World War I. Areas of study include nationalism and independence movements, conflicts between traditional and modern ideas, United States and African relations, and racism in Southern Africa. (DEMAND)

**HIST 415. The Automobile and the Making of Modern America** **Credit 3(3-0)**

No country on earth has embraced the automobile as thoroughly as the United States. This course analyzes the reasons for the American love affair with the car and the impact of automobility on American society and culture from the early twentieth century to the present. Topics discussed include the advent of mass production as pioneered by Henry Ford, the transformation of the American landscape to meet the needs of the car, the growth of big labor, the rise of consumer culture, the car as a cultural icon, environmental problems created by unchecked automobile use, the Japanese challenge to American industrial practices, and current efforts to reinvent the car to meet the needs of the future. Prerequisite: HIST 205, HIST 220, or permission of the instructor. (DEMAND)

**HIST 416. History of African-American Culture** **Credit 3(3-0)**

This course begins with an investigation of early African-American cultural developments, folk culture, and religious expression in Antebellum America. It also pays special attention to the cultural trends of the twentieth century, the "Harlem Renaissance," and urban life. (DEMAND)

**HIST 417. Colonialism and Slavery in Latin America and the Caribbean** **Credit 3(3-0)**  
(Formerly HIST 317)

This survey course begins with an examination of pre-Columbian societies. It then considers the changes that accompanied the various European colonial projects in the region, and the coming of Latin America's political independence. Topics considered include agrarian change and conflict, colonial economic practices, slave systems and slave cultural practices, indigenous resistance and rebellion, the spread and impact of Christianity, colonial state policies, and the role of women. Students will have the opportunity to develop their ability to analyze and evaluate historical materials, and formulate written and oral arguments. (DEMAND)

**HIST 418. Conflict and Change in Post-Colonial Latin America** **Credit 3(3-0)**  
**and the Caribbean (Formerly HIST 318)**

This course surveys social and political conflict and change beginning with the movements for political independence and concluding with an assessment of recent developments. Topics considered include agrarian change and conflict, economic development and underdevelopment, slave emancipation, gender, urbanization and populism, social revolution, labor, and international relations and foreign intervention. Students will have the opportunity to develop their ability to analyze and evaluate historical materials, and formulate written and oral arguments. (DEMAND)

**HIST 420. Seminar: Urban America** **Credit 3(3-0)**

This course includes special topics in the rise of the American city and the development of urban patterns of life, concentrates on such themes as population shifts to cities, the development of slums and ghettos, growth of municipal institutions and services, and the relationship of government with city residents. Prerequisites: HIST 205 and consent of the instructor. (DEMAND)

**HIST 425. Topics in African-American History** **Credit 3(3-0)**

This is an intensive reading, research, and discussion course that will address selected topics in African-American history, including the African background, the institution of slavery, Abolitionism, the Reconstruction era, migration out of the South, the Civil Rights Movement, and African-American intellectual traditions. Prerequisite: HIST 201 and HIST 202 or permission of the instructor. (DEMAND)

**HIST 430. Topics in Twentieth Century American History** **Credit 3(3-0)**

This course includes in-depth analysis of selected topics since the late nineteenth century, with special emphasis on written historical communication. Prerequisites: 6 hours of American history (204 and 205) and the consent of the instructor. (DEMAND)

**HIST 431. History of the Far East to 1800 (Formerly HIST 330)** **Credit 3(3-0)**

This course is a study of the history and culture of the Chinese, Japanese, and Vietnamese peoples from the early classical civilizations to the middle Ch'ing. (DEMAND)

**HIST 432. History of the Far East Since 1800 (Formerly HIST 331)** **Credit 3(3-0)**

Areas of study include traditional China under the Ch'ing the impact of the West, feudal Japan, modernization in Meiji Japan, the Chinese Revolutions, and the Chinese model in Vietnam. (DEMAND)

**HIST 433. United States-East Asian Relations** **Credit 3(3-0)**

This course examines the evolution of the relations between the United States and East Asian countries in the 19<sup>th</sup> and 20<sup>th</sup> centuries. It will focus on such themes as mutual perceptions of Americans and East Asians, activities of American merchants and missionaries in the region, East Asian immigration to the United States, the Pacific War, the Korean War, the Vietnamese War, and the normalization of Sino-American relations. (F;S;SS)

**HIST 435. Global History Since 1945** **Credit 3(3-0)**

At the end of the World War II, the world political order was fundamentally restructured. The old European empires soon came to an end and the world was divided into two dominant blocks. This course explores the coming into being of the bipolar world order of the postwar period and its eventual demise. Special attention will be given to such issues as global vs. local cultures and social formation, development vs. underdevelopment, economic inequalities between the northern and southern hemispheres of the globe, wars of national liberation, ethnicity and nationalism, technological change and the environmental impact of technology, nation states vs. multi-national corporations, and the transformation of global capitalism. The final section of the course will deal with the definitions of postmodernity and their relevance for analyzing the developments in the postwar world. Prerequisite: HIST 101 or permission of the instructor. (DEMAND)

**HIST 440. African-American Intellectual/Philosophical History** **Credit 3(3-0)**

This course examines the ideologies and programs of African-American leaders who have commanded both national and international attention from the antebellum period to the present. Special consideration will be given to the philosophical continuities and differences among leaders in the twentieth century. (DEMAND)

**HIST 444. History of West Africa Since 1800** **Credit 3(3-0)**

This course explores the process by which the peoples of West Africa became integrated in the modern world system, examines cultural and scientific developments of the region, analyzes regional and Pan-African issues, and provides an in-depth study of major themes and problems in West African history. (DEMAND)

**HIST 450. Modernization in Historical Perspective** **Credit 3(3-0)**

This course concentrates on an analysis of the various paths to modernity taken by several advanced societies, notably the United States, England, France, Germany, Russia, and Japan. Particular attention will be devoted to the causes and effects of industrialization, population growth, urbanization, social protest, changes in family structure, intellectual responses to rapid change, and the development of the modern state. (DEMAND)

**HIST 451. Russian History (Formerly HIST 350)** **Credit 3 (3-0)**

This course surveys the history of Russia from earliest times to the present, with emphasis on the twentieth century. (DEMAND)



**HIST 455. Comparative Slavery of the Americas****Credit 3(3-0)**

This course compares the development of different slave labor systems in the Americas from the fifteenth through the nineteenth centuries. After a brief consideration of slavery in the ancient world, the course examines the African origins of the slaves; the Atlantic slave trade; and slave life, work, culture, resistance, and emancipation in North America, Latin America, and the Caribbean. (DEMAND)

**HIST 460. The Old South (Formerly HIST 360)****Credit 3(3-0)**

This course will focus upon the social, political, cultural, and economic evolution of the Old South from the 17th century through the Civil War and Reconstruction eras. In addition, the question of Southern distinctiveness and the tension between democracy and slavery will be analyzed. Issues of race, class, gender and religion will also be central to the course's investigation of rural and urban development in Southern society through 1877. North Carolina will be used frequently as a case in point. (DEMAND)

**HIST 461. History of the New South (Formerly HIST 361)****Credit 3(3-0)**

This course offers a chronological exploration of the history of the South from the end of Reconstruction in 1877 through the development of the concept of "The New South" to the politics and culture of the "Sunbelt South" of today. Major topics will include the political, economic and social conditions after Reconstruction; the myths and realities of the "New South"; Populism and Fusion politics; segregation and disfranchisement in the "New South"; the South in the Progressive Era and World War I; race, religion, gender, class and culture; the Depression and the new Deal; the South after World War II; urbanization and industrialization; and the Civil Rights movement. North Carolina will be used frequently as a case in point. (DEMAND)

**HIST 477. Technology, Empire, and Popular Culture****Credit 3(3-0)**

This course focuses on the technologies of the New Imperialism of the late nineteenth Century both in the context of their use against native populations in various parts of the world and as mechanisms for building consensus in home countries for imperial adventures abroad. It will also examine the process whereby East Asia, South and Southeast Asia, Latin America, and Africa were consolidated into a new global system of Western dominance. Sites such as international expositions, public museums and libraries, and new forms of mass culture and amusement will be explored to demonstrate the appeal of empire in the West. Prerequisites: HIST 250 and 101 or 205 or permission of the instructor. (DEMAND)

**HIST 599. Senior Seminar****Credit 3(3-0)**

This is a capstone course for undergraduate majors in the History Department. The course will address enduring topics of historical interest requiring extensive readings and a research paper. Prerequisite: Senior standing with a major in History or History Education. Other students may take the course with the permission of the instructor. (F)

**Advanced Undergraduate and Graduate****HIST 600. The British Colonies and the American Revolution****Credit 3(3-0)**

The planting and maturation of the English colonies of North America are required. Relationships between Europeans, Indians, and transplanted Africans, constitutional development, religious ferment, and the colonial economy are studied. (DEMAND)

**HIST 603. Civil War and Reconstruction****Credit 3(3-0)**

Causes as well as constitutional and diplomatic aspects of the Civil War, the role of the African-American in slavery, in war, and in freedom, and the socio-economic and political aspects of Congressional Reconstruction and the emergence of the New South are studied. (DEMAND)



**HIST 605. Twentieth Century Russian History** **Credit 3(3-0)**

This is a reading, research, and discussion course that examines the history of twentieth century Russia with special emphasis on the Russian Revolution, the development of Communist society, the impact and legacy of Stalin, relations with the United States and other countries during the Cold War, the demise of the Soviet Union, and current problems facing post-society Russia. (DEMAND)

**HIST 606. U.S. History, 1900-1932** **Credit 3(3-0)**

This course emphasizes political, economic, social, cultural and diplomatic developments from 1900 to 1932 with special attention to their effect upon the people of the United States and their influence on the changing role of the U.S. in world affairs. (DEMAND)

**HIST 607. U.S. Since 1932-Present** **Credit 3(3-0)**

With special emphasis on the Great Depression, New Deal, the Great Society, and the expanding role of the United States as a world power, World War II, cold war, and the Korean and Vietnam conflicts are studied. Major themes include the origin, consolidation, and expansion of the New Deal, the growth of executive power, the origins and spread of the Cold War, civil liberties, civil rights, and challenges for the extension of political and economic equality and the protection of the environment. (DEMAND)

**HIST 610. Seminar in the History of Twentieth Century Technology** **Credit 3(3-0)**

This is a reading, research, and discussion course, which investigates the development and, especially, the impact of major twentieth century technologies. Attention will also be given to the process of invention, the relationship between science and technology, and the ethical problems associated with some contemporary technologies. (DEMAND)

**HIST 615. Seminar in African-American History** **Credit 3(3-0)**

This is a reading, research, and discussion course, which concentrates on various aspects of the life and history of African-Americans. The emphasis is placed on historiography and major themes including nationalism, black leadership and ideologies, and economic development. (DEMAND)

**HIST 616. Seminar in African History** **Credit 3(3-0)**

Research, writing and discussion on selected topics in African history will be included in this course. (DEMAND)

**HIST 617. Readings in African History** **Credit 3(3-0)**

By arrangement with instructor. (SS)

**HIST 618. The African Diaspora** **Credit 3(3-0)**

This is an advanced reading, research, and discussion course on the historical experience of people of African descent in a global context. It examines the worldwide dispersal and displacement of Africans over time, emphasizing their migration and settlement abroad over the past five centuries. (DEMAND)

**HIST 619. Modern China** **Credit 3(3-0)**

This course will begin with attention to the main characteristics of traditional Chinese civilization. The focus of the course will be on the political, social, economic, and intellectual changes in Chinese society from the 1840s to the present. (F;S;SS)

**HIST 620. Seminar in Asian History** **Credit 3(3-0)**

Research, writing, and selected topics in Asian history will be included in this course. (DEMAND)

**HIST 621. Seminar in Latin American and Caribbean History** **Credit 3(3-0)**

This course requires research, writing and discussion of selected topics in Latin American and Caribbean History, including urban and rural conflict, social revolution, race relations, problems of underdevelopment, and contemporary issues. (DEMAND)

**HIST 626. Revolutions in the Modern World****Credit 3(3-0)**

This is a seminar course stressing comparative analysis of revolutions and revolutionary movements in the United States, France, Russia, China, Cuba, and Iran. Students will also evaluate theories of revolution in light of historical examples. (DEMAND)

**HIST 628. The Civil Rights Movement****Credit 3(3-0)**

From original research, class lectures, and discussions, students will become familiar with the nature of the Civil Rights Movement; will evaluate its successes and failures; and will analyze the goals and tactics of each major participating Civil Rights organization. Students will also evaluate the impact of the Civil Rights Movement on American society. (DEMAND)

**HIST 629. Seminar on the History of Early Modern Europe****Credit 3(3-0)**

Through extensive readings, discussion, research, and writing, students will examine selected topics of enduring importance in the history of Europe from the Renaissance through the French Revolution. (DEMAND)

**HIST 630. Studies in European History, 1815-1914****Credit 3(3-0)**

This is an intensive study of selected topics in nineteenth century European history. (DEMAND)

**HIST 631. Studies in Twentieth Century Europe, 1914-Present****Credit 3(3-0)**

This course offers an intensive study of key topics in twentieth century European history, including World Wars I and II, the Russian Revolution, Hitler and the Holocaust, the Depression, the Cold War and bipolarism, the Welfare State, the Common Market, the collapse of Communism in Eastern Europe, and current problems. (DEMAND)

**HIST 633. Independent Study in History****Credit 3(3-0)**

By arrangement with instructor. (F;S;SS)

**GEOGRAPHY****GEOG 200. Principles of Geography****Credit 3(3-0)**

This course surveys the physical characteristics of the earth's surface including landforms, climates, vegetation and soils. The emphasis is on global variations and interactions among these physical characteristics. (F;S)

**GEOG 210. World Regional Geography****Credit 3(3-0)**

This course is a survey of the geographic character of the major culture regions of the world. Contemporary cultural characteristics are examined within the framework of both environmental relationships and historical development. (F;S)

**GEOG 319. Regional Geography of the United States and Canada****Credit 3(3-0)**

This course is a study of geographic regions of the United States and Canada. (DEMAND)

**GEOG 322. Economic Geography****Credit 3(3-0)**

This course is a geographical survey of major economic activity with emphasis on global patterns of production and exchange of commodities that are strategic in sustaining the world's population and modern economic development. (DEMAND)

**Undergraduate and Graduate****GEOG 640. Topics in Geography of the United States and Canada****Credit 3(3-0)**

Selected topics in cultural geography of the United States and Canada are studied intensively. Emphasis is placed upon individual reading and research and group discussion. (DEMAND)

**GEOG 641. Topics in World Geography****Credit 3(3-0)**

Selected topics in geography are studied intensively. Concern is for cultural characteristics and their interrelationships with each other and with habitat. Emphasis is upon reading, research, and discussion. (DEMAND)

## PHILOSOPHY

### **PHIL 260. Introduction to Philosophy**

**Credit 3(3-0)**

This is an introductory course covering such topics as theories of reality, the nature of mind and knowledge, and the higher values of life. (S)

### **PHIL 261. History of Philosophy**

**Credit 3(3-0)**

The history of philosophic thought is traced from ancient Greek philosophers to modern philosophers through Hegel. (DEMAND)

### **PHIL 262. Logic**

**Credit 3(3-0)**

This is an introductory course designed to give a critical analysis of the principles, problems and fallacies in reasoning. (F;S;SS)

### **PHIL 308. Culture and Value**

**Credit 3(3-0)**

This course is a critical study of the nature and justification of basic ethical concepts in light of historical thought. (DEMAND)

### **PHIL 309. Contemporary Philosophy**

**Credit 3(3-0)**

This course involves a critical investigation of some contemporary movements in philosophy with special emphasis on existentialism, pragmatism, and positivism. (DEMAND)

## DIRECTORY OF FACULTY

**Linda D. Addo** ..... Associate Professor and Coordinator of  
Education Programs in the Department of History

B.A., Bennett College; M.A., University of North Carolina at Chapel Hill; Ed.D., University of North Carolina – Greensboro

**Stephen Alston** ..... Visiting Lecturer

B.A., M.A., J.D., North Carolina Central University

**Sarah Beale** ..... Visiting Lecturer

B.A., Wake Forest College, M.A.T., Duke University

**Jacqueline Y. Blackmore** ..... Assistant Professor

B.S., M.S., North Carolina A&T State University; Ph.D., Northern Illinois University

**Millicent Brown** ..... Assistant Professor

B.A., College of Charleston, M.Ed., The Citadel, Ph.D., Florida State University

**Cynthia Clemons** ..... Visiting Lecturer

B.A., University of North Carolina at Chapel Hill, M.A., North Carolina Central University

**Olen Cole, Jr.** ..... Professor and Chair

B.A., M.A., California State University - Fresno; Ph.D., University of North Carolina at Chapel Hill

**Margaret D. Barrett** ..... Associate Professor

B.S., University of Southern Mississippi; M.A., Southern Illinois University; Ph.D., University of Missouri -Columbia

**Larry Ferguson** ..... Visiting Lecturer

B.A., University of North Carolina at Greensboro, M.A., North Carolina A&T State University

**Fuabeh P. Fonge** ..... Associate Professor

B.A., University of Yaounde; M.A., Georgetown University; Ph.D., Howard University

- David Harris** ..... **Visiting Lecturer**  
 B.A., University of North Carolina at Wilmington, B.A., B.S., University of North Carolina at Greensboro; M.A., Indiana University
- Peter V. Meyers** ..... **Professor and Director, University Honors Program**  
 B.A., Wesleyan University; M.A., Ph.D., Rutgers University
- Conchita F. Ndege** . . . **Associate Professor and Director of the African Heritage Center**  
 B.F.A., Xavier University; M.A., Ph.D., Howard University
- Thomas E. Porter** ..... **Associate Professor**  
 B.A., Loyola College; M.A., Ph.D., University of Washington
- Michael Roberto** ..... **Visiting Lecturer**  
 B.A., Adelphi University, M.A., University of Rhode Island, Ph.D., Boston College
- Sandra T. Williamson** ..... **Instructor**  
 B.A., Johnson C. Smith University, M.A., University of Illinois
- James A. Wood** ..... **Assistant Professor**  
 B.A., Tufts University, M.A., Ph.D., University of North Carolina at Chapel Hill
- Yunqui Zhang** ..... **Assistant Professor**  
 B.A., Qufu Normal University; M.A., Ph.D., University of New Brunswick



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## Department of Mathematics

<http://www.ncat.edu/~math/>

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**Wilbur L. Smith, Chairperson**

### OBJECTIVES

The objectives of the Mathematics Department are as follows:

1. to prepare students for employment in government or industry as well as graduate studies;
2. to avail students of the opportunity to undertake independent investigations in mathematics;
3. to prepare students to teach and present mathematics in a modern, meaningful, and stimulating manner at secondary school level;
4. to provide courses which ensure acquisition of basic mathematical skills and concepts for all students at the university;
5. to encourage wide ranging professional growth and research by faculty;
6. to encourage faculty involvement in university, college, and departmental governance, as well as in community activities;
7. to understand and effectively respond to student retention and graduation rates.

### DEGREES OFFERED

Applied Mathematics – Bachelor of Science

Mathematics – Bachelor of Science

Mathematics, Secondary Education – Bachelor of Science

Applied Mathematics – Master of Science\*

Mathematics, Secondary Education – Master of Science\*

\* See the Graduate School Bulletin

### GENERAL PROGRAM REQUIREMENTS

Admission, retention and graduation requirements for students enrolled in degree programs in the Department of Mathematics are based upon the general admission, retention and graduation requirements of the University. However, two units of algebra, one unit of plane geometry and one-half unit of trigonometry are required of all students who elect to pursue any curriculum offered in the department.

### SPECIFIC PROGRAM REQUIREMENTS

#### Applied Mathematics

The Applied Mathematics major must complete a minimum of 125 semester hours of University courses, including 44 hours in mathematics, 16 hours in physics and computer science and 24 hours of applications area electives.

#### Mathematics

The Mathematics major must complete a minimum of 125 semester hours of University courses. These include 50 hours in mathematics and 24 hours in physics, chemistry and computer science courses.

## Mathematics, Secondary Education

The Mathematics Education major must complete a minimum of 125 semester hours of University courses. These include 44 hours in mathematics and 28 hours in education and/or psychology. Also, majors must earn a "C" or better grade in each mathematics course taken to fulfill the mathematics requirement. All Teacher Education admissions, retention and graduation standards apply.

### CAREER OPPORTUNITIES

The Bureau of Labor Statistics of the U.S. Department of Labor in its "Occupational Outlook for College Graduates" continues to report that the employment opportunities in education, cost analysis, government service and public health are expected to be excellent for graduates in mathematics.

### REQUIRED MAJOR COURSES FOR APPLIED MATHEMATICS

MATH 105	MATH 311	MATH 465
MATH 131	MATH 431	MATH 505
MATH 132	MATH 432	MATH 507
MATH 224	MATH 450	MATH 608
MATH 231	MATH 460	MATH Elective (one)

### CURRICULUM GUIDE FOR APPLIED MATHEMATICS

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 131	4	MATH 132	4
MATH 105	1	COMP 165	4
COMP 160	4	ENGL 101	3
ENGL 100	3	FOLA Elective <sup>2</sup>	3
Social Science Elective <sup>1</sup>	3	Social Science Elective <sup>1</sup>	<u>3</u>
PHED 200 <sup>6</sup>	<u>2</u>		17
	17		

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 231	4	MATH 311	3
SPCH 250	3	MATH 431	3
PHYS 241, 251 (Lab)	4	PHYS 242, 252 (Lab)	4
Applications Area Elective <sup>3</sup>	3	Applications Area Elective <sup>3</sup>	3
FOLA Elective <sup>2</sup>	<u>3</u>	Humanities Elective <sup>4</sup>	<u>3</u>
	17		16

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 432	3	MATH 224	3
MATH 450	3	MATH 465	3
Applications Area Elective <sup>3</sup>	3	Applications Area Elective <sup>3</sup>	3
Social Science Elective <sup>1</sup>	3	Applications Area Elective <sup>3</sup>	3
Humanities Elective <sup>4</sup>	<u>3</u>	Social Science Elective <sup>1</sup>	<u>3</u>
	15		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 507	3	MATH 608	3
MATH 460	3	MATH 505	1
Applications Area Elective <sup>3</sup>	3	Applications Area Elective <sup>3</sup>	3
Applications Area Elective <sup>3</sup>	3	MATH Elective <sup>5</sup>	3
Elective	<u>3</u>	Elective	<u>3</u>
	15		13

### *Credit Hour Summary*

Mathematics	44
Physics and Computer Science	16
Applications Area Elective	24
General Education	35
Free Elective	<u>6</u>
Total Credit Hours:	125

<sup>1</sup> Four courses HIST 100<sup>8</sup>, 101<sup>8</sup>, 215<sup>7</sup>, 216<sup>7</sup>, 310<sup>7</sup>, 311<sup>7</sup>, 320<sup>7,8</sup>, 328<sup>7</sup>, 412<sup>7,8</sup>, 416<sup>7</sup>; GEOG 200, 210; POLI 200, 220<sup>7</sup>, 445<sup>7,8</sup>; SOC 100, 200, 314<sup>7</sup>.

<sup>2</sup> Two courses FOLA 100, 101; or FOLA 102, 103; or FOLA 104, 105; or FOLA 106, 107.

<sup>3</sup> Must include a total of 24 credit hours taken in one of the applications areas, including but not limited to: Applied and Computational Mathematics, Physics, Computer Science, Biology, Electrical and Computer Engineering, Environment Mathematics, Industrial Management and Engineering, or Business and Economics, and approved by the Applied Mathematics Undergraduate Program Committee. A list of suggested core courses for each of the applications areas is available from the Department of Mathematics.

<sup>4</sup> Two courses ENGL 200, 201, 202, 333<sup>7</sup>, 433; MUSI 216, 217, 220<sup>7</sup>, 221<sup>7</sup>; ART 224, 225; SPCH 321, 351; PHIL 260, 262; FOLA 417<sup>7,8</sup>.

<sup>5</sup> MATH 508, 511, or 612.

<sup>6</sup> May be replaced by any two credits in Physical Education.

<sup>7</sup> One of these courses can be considered as required 3 credit hours of Black Studies.

<sup>8</sup> One of these courses can be considered as required 3 credit hours of Global Studies, but no single course can fulfill both Black

Studies and Global Studies requirements simultaneously.

## REQUIRED MAJOR COURSES FOR MATHEMATICS

MATH 105	MATH 431	MATH 507
MATH 131	MATH 432	MATH 508
MATH 132	MATH 450	MATH 511
MATH 224	MATH 440, 460, or 465	MATH 512
MATH 231	MATH 505	MATH Electives (two)
MATH 311		

## CURRICULUM GUIDE FOR MATHEMATICS

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 131	4	MATH 132	4
CHEM 106, 116 (Lab)	4	CHEM 107, 117 (Lab)	4
ENGL 100	3	ENGL 101	3
Social Science Elective <sup>1</sup>	3	Social Science Elective <sup>1</sup>	3
MATH 105	1	SPCH 250	<u>3</u>
FRST 100	<u>1</u>		17
	16		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 231	4	MATH 311	3
COMP 160	4	MATH 224	3
PHYS 241, 251 (Lab)	4	PHYS 242, 252 (Lab)	4
Humanities Elective <sup>2</sup>	<u>3</u>	Humanities Elective <sup>2</sup>	3
	15	COMP 165	<u>4</u>
			17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 431	3	MATH 508	3
MATH 507	3	MATH 432	3
PHED 200	2	MATH 450	3
FOLA <sup>3</sup>	3	FOLA <sup>3</sup>	3
Humanities Elective <sup>2</sup>	<u>3</u>	Elective	<u>3</u>
	14		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 511	3	MATH 512	3
MATH 440, 460, or 465	3	MATH 505	1
Social Science Elective <sup>1</sup>	3	Social Science Elective <sup>1</sup>	3
MATH Elective <sup>4</sup>	3	MATH Elective <sup>4</sup>	3
Elective	<u>3</u>	Electives	<u>6</u>
	15		16

#### *Credit Hour Summary*

Mathematics	50
Physical and Computer Science	24
General Education	39
Free Elective	<u>12</u>
Total Credit Hours:	125

<sup>1</sup> Four courses required: HIST 100, 101, 215, 216, 310, 311, 328, 412, 416; GEOG 200,210; POLI 200,220, 445; SOCI 100, 200, 314; PYSC 320, 321.

<sup>2</sup> Three courses required: ENGL 200, 201, 202, 331, 333, 433, 650, 652, 654, 656, 658, 660; MUSI 216, 217, 220, 221; ART 224, 225; SPCH 321, 351; PHIL 260, 262; FOLA 417, 618; THEA 630.

<sup>3</sup> A sequence of two courses in either French, German, or Russian.

<sup>4</sup> 6 hours: MAT 420, 423, 607, 608, 610, 611, 612, 620, 623, 624, 631, 632, 633, 650, 651, 652, 665.

Note: Must include 3 hours Black Studies and 3 hours Global Studies.



# **REQUIRED MAJOR COURSES FOR MATHEMATICS, SECONDARY EDUCATION**

MATH 105	MATH 420	CUIN 301
MATH 131	MATH 450	CUIN 400
MATH 132	MATH 505	CUIN 436
MATH 224	MATH 507	CUIN 500
MATH 231	MATH 511	CUIN 529
MATH 240	MATH Electives (two)	CUIN 560
MATH 242	CUIN 102	CUIN 624
MATH 311		

## **CURRICULUM GUIDE FOR MATHEMATICS, SECONDARY EDUCATION**

### **FRESHMAN YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 131	4	MATH 132	4
ENGL 100	3	ENGL 101	3
MATH 105	1	Social Science Elective <sup>5</sup>	3
Social Science Elective <sup>5</sup>	3	Science Elective <sup>1</sup>	4
Science Elective <sup>1</sup>	4	PHED Elective <sup>2</sup>	1
PHED Elective <sup>2</sup>	<u>1</u>	FRST 100	<u>1</u>
	16		16

### **SOPHOMORE YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 231	4	MATH 240	3
Humanities Elective <sup>7</sup>	3	CUIN 301	2
CUIN 102	2	SPCH 250	3
Humanities Elective <sup>6</sup>	3	Humanities Elective <sup>6</sup>	3
PHED 200	2	MATH 311	3
MATH 224	<u>3</u>	Elective	<u>3</u>
	17		17

### **JUNIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 450	3	MATH 242	3
CUIN 400	3	CUIN 436	3
PSYC 320	3	MATH Elective <sup>4</sup>	6
MATH 507 or 511	3	FOLA Elective <sup>3</sup>	3
FOLA Elective <sup>3</sup>	<u>3</u>	Elective	<u>3</u>
	15		18

### **SENIOR YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 507 or 511	3	CUIN 624	3
MATH 505	1	CUIN 500	3
MATH 529	3	CUIN 560	<u>6</u>
Electives	4		12
MATH 420	<u>3</u>		
	14		

### *Credit Hour Summary*

Mathematics	44
Science Elective	8
Education	28
General Education	35
Free Elective	10
Total Credit Hours	125

<sup>1</sup> 8 hrs. - *PHYS 225, 235 and either PHYS 226, 236 or CHEM 101, 111 or BIOL 100 or CHEM 100.*

<sup>2</sup> 2 hrs. - *PHED 101, 103, 104, 107, 108, 109, 110, 111, 112, 229, 231, 233, 234, 235, 237, 238, 246, 247, 249, 251, 261, 263, 343, 344, 354, 361.*

<sup>3</sup> 6 hrs. - *FOLA 100, 101 or FOLA 102, 103 or FOLA 104, 105.*

<sup>4</sup> 6 hrs. - *MATH 223, 423, 431, 432, 440 or 460, 508, 512, 604, 607, 608, 610, 611, 612, 620, 623, 624, 631, 632, 633, 651, 652, 665.*

<sup>5</sup> 6 hrs. - *HIST 100, 101 or HIST 204, 205.*

<sup>6</sup> 6 hrs. - *ENGL 200, 201 or ENGL 203, ENGL 210.*

<sup>7</sup> 3 hrs. - *ENGL 433, 650, 652, 654, 656, 658, 660; FOLA 417, 618; MUSI 220, 221; THEA 630.*

## **COURSE DESCRIPTIONS IN MATHEMATICS**

### **MATH 099. Intermediate Mathematics**

**Credit 3(3-0)**

This course covers elementary properties of real numbers and basic algebra through solving of quadratic equations by various means. It is required of students whose mathematics SAT scores are low and whose major curriculum includes either MATH 101 or MATH 111. (F;S;SS)

### **MATH 101. Fundamentals of Algebra and Trigonometry I\***

**Credit 3(3-0)**

Numbers and their properties polynomials, rational expressions, rational exponents, radicals, equations and inequalities in one variable, relations and functions are studied. Prerequisite: A satisfactory score on the mathematics portion of the SAT or MATH 099. (F;S;SS)

### **MATH 102. Fundamentals of Algebra and Trigonometry II**

**Credit 3(3-0)**

This course is a continuation of MATH 101. Quadratic functions, systems of linear equations, exponential and logarithmic functions, circular functions, trigonometric functions, analytical trigonometry and the binomial theorem will be studied. Prerequisite: MATH 101. (F;S;SS)

### **MATH 105. Seminar for Freshmen and New Mathematics Majors**

**Credit 1(1-0)**

This course will guide and encourage proper mathematics study habits, and develop an informed mathematics major who will be prepared to move through his or her curriculum. Seminar topics include: how to study mathematics; ethics-academic honesty, respect for property, civility; technology instruction; key information: special deadlines, required tests; and other related topics. (F;S)

### **MATH 110. Pre-Calculus for Engineers and Scientists**

**Credit 4(4-0)**

Algebraic properties of the number system, fundamental operations, exponents and radicals, functions and graphs, solutions of equations and systems of equations, trigonometric functions and identities, inequalities, logarithms, progressions, mathematical induction, binomial theorem, permutations and combinations will be studied. Prerequisites: One unit of high school algebra and one unit of high school geometry. (F;S;SS)

### **MATH 111. College Algebra and Trigonometry\***

**Credit 4(4-0)**

This course is a review of basic algebra; first and second degree equations; polynomial and rational functions-systems of equations-inequalities, right triangle trigonometry; and trigonometric identities and equations. Prerequisites: Mathematics 099 or two units of high school algebra, one unit of high school geometry and a satisfactory score on the mathematical portion of the Scholastic Aptitude Test. (F;S;SS)

**MATH 112. Calculus for Non-Mathematics Majors** **Credit 4(4-0)**

This course includes a brief treatment of basic concepts of differential and integral calculus with applications to business, economics, social and behavioral sciences; polynomial, rational, exponential and logarithmic functions. Prerequisite: MATH 102, 110, or 111. (F;S;SS)

**MATH 115. Mathematics of Business and Finance** **Credit 3(3-0)**

This course includes a brief review of computing with whole numbers, decimals, fractions, percent, problem solving and the metric system. Simple interest, discount, partial payments, payroll wages and commission accounts, discounts and mark-ups, retailing, taxes, distribution of ownership, transactions in corporate securities, insurance, compound interest, annuities amortization and sinking funds will also be studied. Prerequisite: MATH 101, 110, or 111. (DEMAND)

**MATH 123. Discrete Mathematics I** **Credit 3(3-0)**

This course is an introduction to applied discrete mathematics. Topics include set theory, introduction to logic, functions, recursion, relations, properties of integers, and elementary matrix algebra. Prerequisite: MATH 110 or equivalent. (F;S)

**MATH 131. Calculus I** **Credit 4(4-0)**

Limits and continuity of functions, the derivative, applications of the derivative, the definite integral and applications of the definite integral will be studied. Prerequisite: MATH 110 or appropriate approval. (F;S;SS)

**MATH 132. Calculus II** **Credit 4(4-0)**

Topics in analytic geometry, differentiation and integration of exponential, logarithmic, trigonometric, inverse trigonometric and hyperbolic functions, additional techniques and applications of integration, indeterminate forms, improper integrals, Taylor's Formula and infinite series will be studied. Prerequisite: MATH 131. (F;S;SS)

**MATH 223. Discrete Mathematics II** **Credit 3(3-0)**

This course is a continuation of MATH 123. Topics include Boolean algebra and applications elementary graph theory, trees and applications, and mathematical techniques for algorithm analysis. Prerequisite: MATH 123 or 311. (F;S;SS)

**MATH 224. Introduction to Probability and Statistics** **Credit 3(3-0)**

This is a general course covering fundamentals of statistics, central tendencies, variabilities, graphic methods, frequency distributions, correlations, reliability of measures, theory and methods of sampling and descriptive and analytical measures of statistics. Prerequisite: MATH 111. (F;S;SS)

**MATH 231. Calculus III** **Credit 4(4-0)**

This course will cover plane curves and polar coordinates, vector and solid geometry, vector valued functions, partial differentiation, multiple integrals, applications of multiple integrals and vector analysis. Prerequisite: MATH 132. (F;S;SS)

**MATH 240. Introduction to the Programming of Digital Computers** **Credit 3(3-0)**

This course teaches students problem-solving techniques and how to program in the FORTRAN language. Students are exposed to a variety of mathematical computer software, including Maple. Using the graphics calculator as a programming tool will be explored. Prerequisite: MATH 112 or 131. (DEMAND)

**MATH 242. College Geometry** **Credit 3(3-0)**

Postulational systems, Euclid's Parallel Postulate, a brief study of non-Euclidean geometries, Euclidean geometry as a special case of other geometries and defects of Euclid's system will be studied. Prerequisite: MATH 132. (DEMAND)

**MATH 311. Mathematical Logic and Proof Techniques** **Credit 3(3-0)**  
Emphasis placed on development of writing skills and the ability to understand and develop proofs and logical arguments. Topics include quantifiers, rules of logic, and methods of mathematical proof, with applications to sets, integers, real numbers, functions, relations, and combinatorics. Prerequisite: MATH 132. (DEMAND)

**MATH 397. Co-Operative Industrial Experience I** **Variable: 1-4**  
This course is a supervised learning experience in a specified private or governmental facility. The student must be in industry full time for at least one summer or one semester and must perform supervised work that will enhance his/her educational background in an area related to mathematics and/or computer science. In addition to the supervisor's evaluation on the field, the student's performance will be evaluated by a departmental faculty committee, based upon reports, informal portfolios and forum and/or a seminar presented by the student upon his/her return to the University. (DEMAND)

**MATH 398. Co-Operative Industrial Experience II** **Variable: 1-4**  
The description of this course is the same as MATH 397 and is normally the second Co-op experience of the student related to mathematics and/or computer science. The maximum number of credit hours that may be earned by a student in the two courses MATH-397 and MATH 398 is six. (DEMAND)

**MATH 420. History of Mathematics** **Credit 3(3-0)**  
This course is a survey of the development of mathematics by chronological periods with biographical references, illustrations of national and racial achievements and discussion of the evaluation of certain important topics of elementary mathematics. Prerequisite: MATH 231. (DEMAND)

**MATH 423. Theory of Equations** **Credit 3(3-0)**  
Methods of solving cubics, quartics and other algebraic equations, methods of approximating roots-systems of equations, and elements of determinants and matrices will be studied. Prerequisite: MATH 132. (DEMAND)

**MATH 431. Introduction to Differential Equations (Formerly MATH 331)** **Credit 3(3-0)**  
This course will cover first order differential equations, higher order linear differential equations, matrices and determinants, systems of linear algebraic equations, systems of linear differential equations, and Laplace transforms. Prerequisite: MATH 132. (F;S;SS)

**MATH 432. Introduction to Applied Mathematics (Formerly MATH 332)** **Credit 3(3-0)**  
This course will cover Fourier series, partial differential equations, complex variables, Taylor and Laurent series and residue theory. Prerequisite: MATH 431. (F;S;SS)

**MATH 440. Numerical Methods** **Credit 3(2-2)**  
Numerical methods as related to programming techniques, interpolation, extrapolation, approximate solutions of algebraic and transcendental equations, simultaneous linear equations, initial-value, characteristic-value and boundary-value problems, partial differential equations of the hyperbolic parabolic and elliptic types will be studied. Corequisite: MATH 240. (DEMAND)

**MATH 450. Linear Algebra and Matrix Theory (Formerly MATH 350)** **Credit 3(3-0)**  
This course is an introduction to linear algebra and matrix theory; the algebra of matrices and its application to the solutions of systems of linear equations, determinants, real and complex vector spaces, bases, dimension, linear transformations, eigenvalues and eigenvectors. Prerequisite: MATH 132. (F;S;SS)



**MATH 460. Numerical Analysis****Credit 3(3-0)**

This course is an introduction to principles and techniques of numerical mathematics. Topics in round-off error analysis, the approximation of functions, derivatives and integrals, and the numerical solutions of non-linear equations, ordinary differential equations and the systems of linear equations will be studied. Prerequisites: MATH 231, 240 and 450. **(DEMAND)**

**MATH 465. Introduction to Scientific Computing****Credit 3(3-0)**

This course will cover scientific computing fundamentals, and expose the student to high-performance programming languages and scientific computing tools. Topics include errors, approximations, floating point operations, polynomial interpolation, cubic splines, numerical integration, numerical linear algebra, solution of nonlinear equations, the initial value problems. The MATLAB or MAPLE computing environment is used. Prerequisites: MATH 431 and 450. **(S)**

**MATH 505. Seminar in Mathematics****Credit 1(1-0)**

Methods of preparing and presenting seminars, presentation of seminars in current developments in mathematics and/or topics of interest which are not included in formal courses will be studied. Required for mathematics majors. Prerequisite: MATH 507 or 511. **(DEMAND)**

**MATH 507. Intermediate Analysis I****Credit 3(3-0)**

This course includes a rigorous treatment of the fundamental principles of analysis, limits, continuity, sequences, series, differentiability and integrability and functions of several variables. Prerequisites: MATH 231 and 311, or consent of instructor. **(F)**

**MATH 508. Intermediate Analysis II****Credit 3(3-0)**

This course is a continuation of MATH 507. Prerequisite: MATH 507. **(S)**

**MATH 511. Abstract Algebra I****Credit 3(3-0)**

Elementary properties of integers, rings, integral domains, and fields, properties of groups, including abelian groups, permutations, homomorphisms, normal subgroups, and factor groups will be studied. Prerequisite: MATH 231, 311 or consent of instructor. **(F)**

**MATH 512. Abstract Algebra II****Credit 3(3-0)**

This is a continuation of MATH 511, including topics in commutative ring theory, Galois field theory and module theory. Prerequisite: MATH 511. **(S)**

**MATH 550. Vector Analysis****Credit 3(3-0)**

Vector and tensor calculus, covariant and contravariant components; integral theorems; applications to geometry, mechanics and electromagnetic theory will be studied. Prerequisite: MATH 431. **(DEMAND)**

**Advanced Undergraduate and Graduate****MATH 600. Introduction to Modern Mathematics for Secondary School****Teachers****Credit 3(3-0)**

Elementary theory of sets, elementary logic and propositional systems, nature and methods of mathematical proofs, structure of the real number system will be studied. Evaluation of instructional software and use of computer integrated instruction to teach pertinent concepts in secondary school mathematics will also be included. Prerequisite: Consent of the instructor. **(DEMAND)**

**MATH 601. Technology and Applications in Secondary School Mathematics** **Credit 3(3-0)**

This course covers techniques of teaching algebra, advanced algebra, trigonometry, and other secondary mathematics using graphing calculators, software packages and other technology. Prerequisite: Consent of the instructor. **(DEMAND)**

**MATH 602. Modern Algebra****Credit 3(3-0)**

This course covers mappings, binary operations, groups, rings, integral domains, fields, and some applications to coding and cryptography. Prerequisite: MATH 311 or consent of the instructor. (DEMAND)

**MATH 603. Introduction to Real Analysis****Credit 3(3-0)**

The following topics will be covered in this course: elementary set theory, functions, axiomatic development of the real numbers, metric spaces, convergent sequences, completeness, compactness, connectedness, continuity, limits, sequences of functions, differentiation, the mean value theorem, Taylor's theorem, Riemann integration, infinite series, the fixed point theorem, partial differentiation, and the implicit function theorem. Prerequisite: MATH 311 or consent of the instructor. (DEMAND)

**MATH 604. Modern Geometry for Secondary School Teachers****Credit 3(3-0)**

Re-examination of Euclidean geometry, axiomatic systems and the Hilbert axioms, introduction to projective geometry and other non-Euclidean geometries will be included. Prerequisite: MATH 600 or consent of the Department of Mathematics. (DEMAND)

**MATH 606. Mathematics for Chemists****Credit 3(3-0)**

This course includes a review of those principles of mathematics which are involved in chemical computations and derivations from general chemistry through physical chemistry; topics covered include significant figures, methods of expressing large and small numbers, algebraic operations, trigonometric functions and an introduction to calculus. (DEMAND)

**MATH 607. Theory of Numbers****Credit 3(3-0)**

Divisibility properties of the integers, the Euclidean algorithm, congruences, diophantine equations, number-theoretic functions and continued fractions will be studied. Prerequisite: Twenty hours of college mathematics. (DEMAND)

**MATH 608. Methods of Applied Statistics****Credit 3(3-0)**

This course introduces the SAS programming language, and uses it in the analysis of variance, both single and multifactor. It includes various methods of hypothesis testing and constructing confidence intervals. The course covers simple and multiple linear regression, including model building and variable selection techniques. Elements of time series and categorical data analysis are covered. Prerequisite: MATH 224. (DEMAND)

**MATH 610. Complex Variables I****Credit 3(3-0)**

The following topics will be covered in this course: complex number system, limits of complex sequences, complex functions, continuity, limits of functions, derivatives, elementary functions, Cauchy-Riemann equations, antiderivatives harmonic functions, inverse functions, power series, analytic functions, analytic continuation, contour integrals, Cauchy's theorem and Cauchy's integral formula. Prerequisite: MATH 231. (DEMAND)

**MATH 611. Complex Variables II****Credit 3(3-0)**

Mathematics 611 is a continuation of Mathematics 610. The following topics will be covered in this course: Liouville's theorem, the fundamental theorem of algebra, the winding number, generalized Cauchy theorems, singularities, residue calculus, Laurent series, boundary value problems, harmonic functions, conformal mappings, Poisson's formula, potential theory, physical applications and the Riemann mapping theorem. Prerequisite: MATH 610. (DEMAND)

**MATH 612. Advanced Linear Algebra (Formerly MATH 520)****Credit 3(3-0)**

This course covers vector spaces, linear transformations and matrices determinants and systems of linear equations, eigenvalues and eigenvectors, diagonalization, inner products, bilinear quadratic forms, canonical forms, and application to engineering, and applied sciences. Prerequisite: MATH 450 or consent of the instructor. (DEMAND)

**MATH 620. Elements of Set Theory and Topology** **Credit 3(3-0)**  
Operations on sets, indexed families of sets, products of sets, relations, functions, metric spaces, general topological spaces, continuity, compactness and connectedness will be included. Prerequisites: MATH 231 and consent of the instructor. **(DEMAND)**

**MATH 623. Probability Theory and Applications** **Credit 3(3-0)**  
This course begins with an introduction to sample spaces and probability, including combinatorics. It covers continuous and discrete random variables, including multi-variate random variables and expectations; also marginal and conditional distributions are derived. The course introduces moment generating functions, and covers the central limit theorem and its applications. Prerequisite: MATH 231. **(DEMAND)**

**MATH 624. Theory and Methods of Statistics** **Credit 3(3-0)**  
This course introduces methods of statistical estimation and inference including the following topics: sufficient statistics, confidence sets, hypothesis tests, and maximum likelihood methods. The theory of uniformly most powerful tests and the Neyman-Pearson Lemma are covered. Other topics include least squares estimation, the linear model, and Bayesian methods. Prerequisite: MATH 623. **(DEMAND)**

**MATH 625. Mathematics for Elementary Teachers, K-8, I** **Credit 3(3-0)**  
This course is designed for in-service and prospective teachers who have as their goal "to teach the basic skills and competencies of mathematics sought in today's world." The course emphasizes that the teacher first, must have the knowledge and skills in order to accomplish this goal. It stresses fundamentals of arithmetic, sets and operations, number systems, fractions, decimals, percents, estimation, consumer arithmetic, problem solving and traditional and metric geometry and measurement. This course may not be used for degree credit. **(DEMAND)**

**MATH 626. Mathematics for Elementary Teachers, K-8, II** **Credit 3(3-0)**  
This is a continuation of MATH 625; provides no credit towards a degree in mathematics; is not open to secondary school teachers of mathematics. Credit on elementary education degree. Prerequisite: MATH 625. **(DEMAND)**

**MATH 631. Linear and Non-Linear Programming** **Credit 3(3-0)**  
This course includes optimization subject to linear constraints; transportation problems, SIMPLEX algorithm; network flows; application of linear programming to industrial problems and economic theories; introduction to non-linear programming. Prerequisites: MATH 450 and a high level programming language. **(DEMAND)**

**MATH 632. Games and Queue Theory** **Credit 3(3-0)**  
This course is a general introduction to game theory; two-person-non-zerosum-non-cooperative games; two-person cooperative games; reasonable outcomes and values; the minimax theorem. Introduction to queuing theory; single server queuing processes; many serve queuing processes; applications to economics and business. Prerequisite: MATH 224, MATH 450, or consent of the instructor. **(DEMAND)**

**MATH 633. Stochastic Processes** **Credit 3(3-0)**  
This course begins with a review of Probability and Random Variables. Markov Processes, Poisson Processes, Waiting Times, Renewal Phenomena, Branching Processes, Queuing System, Service Times are covered. Prerequisite: MATH 623 or consent of the instructor. **(DEMAND)**

**MATH 650. Ordinary Differential Equations** **Credit 3(3-0)**  
This is an intermediate course in ordinary differential equations with emphasis on applications. Topics include linear systems and various phase plane techniques for non-linear ordinary differential equations. Prerequisite: MATH 431. **(DEMAND)**



**MATH 651. Partial Differential Equations** **Credit 3(3-0)**  
 This course includes introduction to complex variables and residue calculus, transform calculus, higher order partial differential equations governing various physical phenomena, nonhomogeneous boundary value problems, orthogonal expressions, Green's functions and variational principles. Prerequisites: MATH 431 and 432. **(DEMAND)**

**MATH 652. Methods of Applied Mathematics** **Credit 3(3-0)**  
 This course covers matrix theory, systems of linear equations, vector spaces, eigenvalue problem and its applications to systems of linear ODEs and mechanical vibrations, the simplest problems of calculus of variations, Euler equations, boundary conditions, extensions of Euler equations, Hamilton's Principles, constraints and Lagrange multipliers, introduction to integral equations, and solutions in iterative and other methods. Prerequisites: MATH 431 and 432. **(DEMAND)**

**MATH 665. Principles of Optimization** **Credit 3(3-0)**  
 Algebra, linear inequalities, duality, graph, transport network; linear programming; special algorithms; selected applications. An upper level course. Prerequisites: MATH 231 or equivalent and MATH 240 and 450. **(DEMAND)**

**MATH 675. Graph Theory** **Credit 3(3-0)**  
 Varieties of graphs, graph theory algorithms, and applications of graph theory to other disciplines will be studied. Prerequisite: MATH 450. **(DEMAND)**

**MATH 691. Special Topics in Applied Mathematics** **Credit 3(3-0)**  
 Topics are selected from differential equations, numerical methods, operations research, applied mechanics and from other fields of applied mathematics. Prerequisites: Senior or graduate standing and consent of the instructor. **(DEMAND)**

*\* Students are required to purchase supplemental materials for this course. General Education course.*

### DIRECTORY OF FACULTY

- Bampia A. Bangura** ..... **Associate Professor**  
 B.S., Njala University College; M.S., North Carolina A&T State University, Ed.D., Louisiana State University
- Bolindra N. Borah** ..... **Professor**  
 B.S., Gauhat University, India; M.S., Ph.D., Oregon State University
- Shea D. Burns** ..... **Assistant Professor**  
 B.S., North Carolina A&T State University; M.S., Ph.D., Howard University
- Gilbert Casterlow, Jr.** ..... **Professor**  
 B.S., M.S., North Carolina A&T State University; Ph.D., Pennsylvania State University
- Mingxiang Chen** ..... **Assistant Professor**  
 B.S., M.S., Huazhong Normal University; Ph.D., Georgia Institute of Technology
- James F. Chew** ..... **Associate Professor**  
 B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University
- Thomas G. Clarke** ..... **Assistant Professor**  
 B.A., Hiram College; M.S., Purdue University; Ph.D., Kent State University
- Dominic P. Clemence** ..... **Professor**  
 B.S., North Carolina A&T State University; M.S., Ph.D., Virginia Polytechnic Institute and State University



- Kathy M. Cousins-Cooper** ..... **Associate Professor**  
 B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., University of South Florida
- Gregory Gibson** ..... **Adjunct Assistant Professor**  
 B.A., State University of New York/College at Geneseo; M.S., Ph.D., North Carolina State University
- Alexandra Kurepa** ..... **Professor**  
 B.S., M.S., University of Zagreb; Ph.D., University of North Texas
- Marcus Lamberth** ..... **Lecturer**  
 B.S., M.S., North Carolina A&T State University; M.S., University of Illinois
- Robert C. Mers** ..... **Associate Professor**  
 A.B., University of Texas; M.S., University of Illinois; Ph.D., University of Colorado
- Janis M. Oldham** ..... **Associate Professor**  
 B.A., University of Chicago; M.S., Purdue University; Ph.D., University of California-Berkeley
- Gloria J. Phoenix** ..... **Lecturer**  
 B.S., Virginia Union University; M.S., University of North Carolina at Chapel Hill
- Patricia G. Shelton** ..... **Lecturer**  
 B.S., M.S., North Carolina A&T State University
- Wilbur L. Smith** ..... **Professor and Chairperson**  
 B.S., North Carolina A&T State University, M.S., Ph.D., Pennsylvania State University
- Guoqing Tang** ..... **Associate Professor**  
 B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University
- Tracey A. Tullie** ..... **Assistant Professor**  
 B.S., Alabama State University; M.S., Ph.D., North Carolina State University
- Paramanathan Varatharajah** ..... **Associate Professor**  
 B.S., University of Jaffna; M.S., Ph.D., University of Arizona
- A. Giles Warrack** ..... **Associate Professor**  
 B.S., M.S., California State Polytechnic University; Ph.D., University of Iowa

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## Department of Physics

<http://www.physics.ncat.edu>

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**Solomon Bililign, Chairperson**

### OBJECTIVES

The specific objectives of the Department are as follows:

1. to prepare majors for graduate study and careers in physics, medicine and other professional fields.
2. to prepare majors for work in research and development laboratories.
3. to prepare majors to teach physics and mathematics in high school.
4. to provide majors in other departments with a clear understanding of the laws of physics and their applications.

To meet these objectives we train our students to acquire problem solving skills, practical hand-on experience, computational skills, writing skills: teaching, speaking skills: social skills, independent learning skills and global awareness.

### DEGREES OFFERED

Physics (Professional) – Bachelor of Science

Physics, Secondary Education – Bachelor of Science

Engineering Physics – Bachelor of Science

Professional Physics – Master of Science\*

Applied Physics – Master of Science\*

*\*See the Graduate School Bulletin*

### GENERAL PROGRAM REQUIREMENTS

In addition to the general admission requirements of the University, a student must have two units of algebra, one unit of plane geometry, and 1/2 unit of trigonometry.

### DEPARTMENTAL REQUIREMENTS COURSES

*Professional Physics Major*—The major in professional physics must complete 128 semester hours of University courses. Included in the 128 semester hours are 53 semester hours of physics courses. A minimum grade of “C” must be achieved in all math and physics courses.

A student may complete requirements for a professional physics degree and also satisfy admission requirements for some medical schools by taking the following courses as electives: BIOL 160, 140, 260 and CHEM 221 and 222. Many medical schools may admit students after the completion of the third year of study.

*Engineering Physics Major*—The major in engineering physics must complete 128 semester hours of University courses. Included in the 128 semester hours are 47 semester hours of physics and 24 semester hours in engineering. A minimum grade of “C” must be achieved in all math and physics courses.

*Physics Secondary Education*—The teaching major must complete 128 semester hours of University courses. Included in these 128 hours are 32 semester hours of physics courses. A minimum grade of “C” must be achieved in all math and physics courses.

## ACCREDITATION

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

## CAREER OPPORTUNITIES

A degree in physics will allow the student to go directly into research activity, study for an advanced degree, or teach in junior or senior high school. A study of physics may give the technical background useful in such fields as medicine, law, computer science, astronomy, or business.

## CURRICULUM GUIDE FOR PROFESSIONAL PHYSICS

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 102	1	PHYS 241	3
COMP 160	4	PHYS 251	1
MATH 131	4	MATH 132	4
ENGL 100	3	ENGL 101	3
African American Studies <sup>1</sup>	3	PHED Elective	2
FOLA	<u>3</u>	FOLA	<u>3</u>
	18		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 242	3	PHYS 405	3
PHYS 252	1	PHYS 406	3
MATH 231	4	PHYS 445	3
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
Soc./Behavioral Science <sup>3</sup>	<u>3</u>	Humanities Elective <sup>2</sup>	<u>3</u>
	15		16

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 400	3	PHYS 401	3
PHYS 415	3	PHYS 416	3
PHYS 420	3	PHYS 422	3
PHYS 520	2	PHYS 550	3
MATH 331	3	MATH 332	<u>3</u>
Global Studies	<u>3</u>		15
	17		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 430	3	Technical Electives <sup>4</sup>	4
PHYS Elective	3	Free Electives	6
Technical Electives <sup>4</sup>	3	Soc./Behavioral Science <sup>3</sup>	3
PHYS Elective	3	Humanities Elective <sup>2</sup>	<u>3</u>
PHYS Elective	<u>3</u>		16
	15		

Total Credit Hours: 128

<sup>1</sup> One course in African American Studies and one course in Global Studies required as a Humanities or a Social Science.

<sup>2</sup> Three courses required - Art, English, Humanities, Music, Philosophy, or Speech. May include the African American Studies requirement.

<sup>3</sup> Three courses required - Anthropology, Economics, Geography, History, Political Science, or Sociology. May include the African American and/or the Global Studies requirements.

<sup>4</sup> Physics 4xx or 5xx level recommended or above lxx level in other technical areas.

## CURRICULUM GUIDE FOR PHYSICS, SECONDARY EDUCATION

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 102	1	PHYS 241	3
PHYS 110	2	PHYS 251	1
PHYS 111	1	MATH 132	4
MATH 131	4	ENGL 101	3
ENGL 100	3	SPEECH 250	3
Social Science <sup>1</sup>	3	Social Science <sup>1</sup>	<u>3</u>
PHED 200	<u>2</u>		17
	16		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 242	3	PHYS 405	3
PHYS 252	1	PHYS 406	3
MATH 231	4	CHEM 106	3
PSYC 320	3	CHEM 116	1
ENGL 200	3	ENGL 201	3
CUIN 300	<u>2</u>	PHED 101	1
	16	CUIN 301	<u>2</u>
			16

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 400	3	PHYS 401	3
PHYS 415	3	PHYS 416	3
MATH 240	3	BIOL 140	4
FOLA	3	FOLA	3
Free Electives	2	CUIN 436	<u>3</u>
CUIN 400	<u>3</u>		16
	17		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 520	2	CUIN 500	3
PHYS 101	3	CUIN 535	3
EASC 201	3	CUIN 560	6
BIOL 160	4	CUIN 624	<u>3</u>
African American Studies <sup>2</sup>	<u>3</u>		15
	15		

Total Credit Hours: 128

<sup>1</sup> HIST 100, 101 or HIST 204, 205.

<sup>2</sup> One course in African American Studies and one course in Global Studies required as a Humanities or a Social Science.

## CURRICULUM GUIDE FOR ENGINEERING PHYSICS

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 102	1	PHYS 241	3
COMP 160	4	PHYS 251	1
MATH 131	4	MATH 132	4
ENGL 100	3	ENGL 101	3
African American Studies <sup>1</sup>	3	PHED Elective	2
Foreign Language	<u>3</u>	Foreign Language	<u>3</u>
	18		16



## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 242	3	PHYS 405	3
PHYS 252	1	PHYS 406	3
MATH 231	4	PHYS 445	3
CHEM 106	3	Engineering Electives	4
CHEM 116	1	Humanities Elective <sup>2</sup>	<u>3</u>
Soc./Behavioral Science <sup>3</sup>	<u>3</u>		16
	15		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 400	3	PHYS 401	3
PHYS 415	3	PHYS 416	3
PHYS 420	3	PHYS 422	3
PHYS 520	2	Engineering Electives	4
MATH 331	3	MATH 332	<u>3</u>
PHED Elective	<u>2</u>		16
	17		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 430	3	Engineering Electives	9
Engineering Electives	6	PHYS Elective	3
Soc./Behav. Science <sup>3</sup>	3	Humanities Elective <sup>2</sup>	<u>3</u>
PHYS 550	<u>3</u>		15
	15		

Total Credit Hours: 128

<sup>1</sup> One course in African American Studies and one course in Global Studies required as a Humanities or a Social Science.

<sup>2</sup> Three courses required - Art, English, Humanities, Music, Philosophy, or Speech. May include the African American requirement.

<sup>3</sup> Three courses required - Anthropology, Economics, Geography, History, Political Science, or Sociology. May include the African American and/or the Global Studies requirements.

## CURRICULUM GUIDE FOR THE MINOR IN PHYSICS

Grades of "C" or Better in:

<i>Course</i>	<i>Credit</i>
PHYS 241	3
PHYS 242	3
PHYS 251	1
PHYS 252	1
PHYS 406	3
400 level or higher	
Physics Electives*	<u>9</u>
	20

\* Chosen with prior approval by the Chairperson of the Department of Physics.

## COURSE DESCRIPTIONS IN PHYSICS

### PHYS 101. Introduction to Astronomy

**Credit 3(3-0)**

The fundamentals of astronomy with emphasis on methods of observation and the solar system; astronomical instruments including optical and radio telescopes; and the nature of the sun, moon, planets and other objects of the solar system will be studied. (F;S)

**PHYS 102. Physics Orientation****Credit 1(1-0)**

This course includes lectures, seminars, and laboratory demonstrations; orientation to the Physics Department; and presentation of selected topics, student participation, and discussions. **(F)**

**PHYS 110. Survey of Physics****Credit 2(2-0)**

This is a one-semester study of selected topics in physics from each of the following: Newtonian mechanics, heat, sound, electricity and magnetism, light, atomic, and nuclear physics, and relativity. Prerequisites: MATH 102, 110 or 111. Corequisite: PHYS 111. **(F;S;SS)**

**PHYS 111. Survey of Physics Lab****Credit 1(0-2)**

This is a laboratory course to be taken concurrently with PHYS 110, Survey of Physics. Students will perform experiments designed to verify and/or clarify physics concepts. Corequisite: PHYS 110. **(F;S;SS)**

**PHYS 211. Technical Physics I****Credit 3(4-0)**

This is a study of the basic principles of mechanics, thermodynamics, wave motion, sound, electricity, magnetism, optics, and modern physics. Emphasis is placed on applications of physics in modern technology. Prerequisite: MATH 111. Corequisites: MATH 112 and PHYS 216. **(DEMAND)**

**PHYS 212. Technical Physics II****Credit 3(4-0)**

This is a continuation of PHYS 211. Prerequisite: PHYS 211. Corequisite: PHYS 217. **(DEMAND)**

**PHYS 216. Technical Physics I Laboratory****Credit 1(0-2)**

This is a qualitative and quantitative study of certain physical systems; critical observations and codification of data are emphasized. Corequisite: PHYS 211. **(DEMAND)**

**PHYS 217. Technical Physics II Laboratory****Credit 1(0-2)**

This is a continuation of PHYS 216. Corequisite: PHYS 212. **(DEMAND)**

**PHYS 225. College Physics I****Credit 2(2-0)**

This is a study of the fundamental principles of mechanics, properties of motion, heat and thermometry, electromagnetism, wave motion, sound, light, and modern physics. Calculus is not used; however, a knowledge of analytical geometry is required. Prerequisite: MATH 110 or 111. Corequisite: PHYS 235. **(F;S;SS)**

**PHYS 226. College Physics II****Credit 2(2-0)**

This is a continuation of PHYS 225. Prerequisite: PHYS 225. Corequisite: PHYS 236. **(F;S;SS)**

**PHYS 235. College Physics I Laboratory****Credit 1(0-2)**

This is a course which will emphasize the importance of experimentation and observations in the development of a physical science. A selected group of experiments will be undertaken. Corequisite: PHYS 225. **(F;S;SS)**

**PHYS 236. College Physics II Laboratory****Credit 1(0-2)**

This is a continuation of PHYS 235. Corequisite: PHYS 226. **(F;S;SS)**

**PHYS 241. General Physics I****Credit 3(2-3)**

This is the calculus based study of physics which covers the fundamental principles of mechanics, thermodynamics, electromagnetism, wave motion, sound, and optics. Corequisites: MATH 132, PHYS 251. **(F;S;SS)**

**PHYS 242. General Physics II****Credit 3(2-3)**

This course is a continuation of PHYS 241 and continues coverage of the fundamental principles of mechanics, thermodynamics, electromagnetism, wave motion, sound, and optics. Corequisite: PHYS 252. **(F;S;SS)**

**PHYS 251. General Physics I Lab****Credit 1(0-2)**

This is a laboratory course where a selected group of physics experiments will be performed. Emphasis is placed on the development of experimental technique, analysis of data, and physical interpretation of experimental results. Corequisite: PHYS 241. (F;S;SS)

**PHYS 252. General Physics II Lab****Credit 1(0-2)**

This course is a continuation of PHYS 251. Corequisite: PHYS 242. (F;S;SS)

**PHYS 400. Physical Mechanics I****Credit 3(3-0)**

This is a course in Newtonian mechanics which along with PHYS 401 includes particle dynamics, conservation laws, vibrational motion, central field motion, rigid body dynamics, Hamilton's principle and Lagrange's equation, and Hamilton's equations. Prerequisites: PHYS 242 and MATH 231. (F)

**PHYS 401. Physical Mechanics II****Credit 3(3-0)**

This course is a continuation of Physics 400 and continues coverage of particle dynamics, conservation laws, vibrational motion, central field motion, rigid body dynamics, Hamilton's principle and Lagrange's equation, and Hamilton's equation. Prerequisite: PHYS 400. (S)

**PHYS 405. Mathematical Physics****Credit 3(3-0)**

This is a course in the applications of mathematics to solutions of physical problems. It covers selected topics in vector analysis, differential equations, special functions, calculus of variations, eigenvalues and eigenfunctions, and matrices. Prerequisite: MATH 231. (F;S)

**PHYS 406. Introduction to Modern Physics****Credit 3(3-0)**

This course is a study of the basics of special relativity, quantum, atomic, molecular, statistical, solid state, nuclear, and particle physics. Prerequisites: PHYS 242 or 226 and MATH 132. (F;S;SS)

**PHYS 415. Electromagnetism I****Credit 3(3-0)**

This is an intermediate course in electromagnetism which along with PHYS 416 includes the study of electric fields and potentials, electric current and magnetic fields, solutions to Maxwell's equations, plane waves, polarization, propagation in media, wave guides and resonant cavities, refraction, and dispersion. Prerequisites: PHYS 242 and MATH 231. (F)

**PHYS 416. Electromagnetism II****Credit 3(3-0)**

This course is a continuation of PHYS 415. Prerequisite: PHYS 415. (S)

**PHYS 420. Quantum Physics I****Credit 3(3-0)**

This course presents a mathematical introduction required for the understanding of quantum mechanics. The solutions of the Schrodinger equation for a free particle and a particle in one-dimensional potentials (square, barrier, etc.), and the postulates of quantum mechanics are presented. Eigenvalue equations, eigenfunctions, and commutation relations will be introduced. Time development of the state function and the time development of expectation values that lead to the concept of constants of motion are developed. The simple harmonic oscillator eigenstates are constructed using the operator method and by solving the Schrodinger equation.

**PHYS 422. Quantum Physics II****Credit 3(3-0)**

This course is a continuation of Physics 420. Topics include: angular momentum, basic properties and eigenvalues of angular momentum operator, addition of angular momentum, the two-particle problem and the hydrogen atom, hydrogenic wave functions, elements of matrix mechanics, spin wave functions, basis and representations, energy representations, angular momentum matrices, Pauli spin matrices, magnetic moment of an electron, addition of spins, time-independent perturbations theory, fine structure of hydrogen atom, Zeeman effect, time-dependent perturbation theory, two-level system, emission and absorption of radiation, spontaneous emission, the variational principle and scattering theory.



**PHYS 430. Thermodynamics and Statistical Mechanics** **Credit 3(3-0)**

This course reviews the principles of thermodynamics which include macroscopic variables, thermodynamic equilibrium, the thermodynamic laws, and kinematic theory. The fundamentals of statistical mechanics are covered which include microcanonical and canonical ensembles, partition functions, Bose and Fermi statistics, and the Boltzmann equation. Prerequisite: PHYS 400. (F;S)

**PHYS 445. Introduction to Computations in Physics** **Credit 3(3-0)**

This course will introduce and use computational techniques to analyze and solve physical problems. Techniques to be used include visual programming language, graphing package, spread sheet, symbolic packages, and other applications. Prerequisites: PHYS 241, PHYS 242 and a course in programming. (F;S)

**PHYS 450. Waves and Optics** **Credit 3(3-0)**

This course explores wave phenomena. It covers the propagation, reflection, refraction of light and includes studies of lenses and optical instruments, interference, diffraction, polarization, line spectra, and thermal radiation. Prerequisite: PHYS 242. (F;S)

**PHYS 451. Introduction to Astrophysics** **Credit 3(3-0)**

This course is a study of radiation from stars and nebulae to determine the basic stellar characteristics, the composition and physical conditions of matter in and between the stars. It also investigates the structural properties of our Milky Way galaxy, as evidenced by the spatial distribution of dust, gas, stars, and magnetic fields. Prerequisite: PHYS 242. (DEMAND)

**PHYS 457. Electromagnetism III** **Credit 3(3-0)**

This course is an extended study of electromagnetism which covers simple radiating systems, multi-pole radiation, and radiation by moving charges, and relativistic kinematics. Prerequisite: PHYS 416. (DEMAND)

**PHYS 465. Atomic, Molecular, and Laser Physics** **Credit 3(3-0)**

This is a study of one-electron atoms, interaction, of one-electron atoms, molecular structure, molecular spectra, emission, absorption and rate equations, laser oscillations, multimode and transient oscillations, specific lasers, laser resonators, and laser applications. Prerequisite: PHYS 406. (S)

**PHYS 467. Solid State Physics** **Credit 3(3-0)**

This is a study of the basics of the topics of binding, crystal structure, the reciprocal lattice, phonons, free and nearly free electron gas models, energy bands, metals semiconductors, insulators, super-conductors, and magnetic properties. Prerequisite: PHYS 406. (F)

**PHYS 468. Nuclear Physics and Elementary Particles** **Credit 3(3-0)**

This is a study of the properties of the nucleus, radioactivity, nuclear reactions, fission and fusion, elementary particles, and particle accelerators. Prerequisite: PHYS 406. (F)

**PHYS 500. Special Topics in Physics** **Variable Credit (1-3)**

This is a junior-senior level course on selected topics in physics not covered in other courses. A descriptive title, syllabus and the amount of credit must have received departmental approval before scheduling. Students' records will carry both course number and descriptive title. The course may be repeated to earn a maximum of six credits. (DEMAND)

**PHYS 510. Physics Seminar** **Variable Credit (1-3)**

This is a study of current developments in physics. The topics and the amount of credit will be determined before the beginning of the course. Prerequisite: Senior standing. (DEMAND)

**PHYS 520. Advanced Laboratory** **Credit 2(1-3)**

This is a laboratory course which emphasizes performing selected experiments in classical mechanics, electromagnetism, optics, and atomic, nuclear and condensed matter physics. This course may be repeated to earn a maximum of four credits. Prerequisite: PHYS 242. (F;S)



**PHYS 530. Computational Techniques in Physics** **Credit 3(2-3)**  
 This course is an application of numerical methods to solve problems in physics. It includes root finding, systems of equations, integration, differentiation, boundary-value problems, and Monte Carlo methods. Prerequisite: PHYS 405. **(DEMAND)**

**PHYS 531. Experimental Physics** **Credit 3(2-3)**  
 This course surveys experimental methods in physics. It involves experiment development, including techniques in instrumentation design and data acquisition. Also, it involves oral and written presentations of experimental results. Prerequisite: PHYS 242. **(DEMAND)**

**PHYS 550. Undergraduate Research** **Variable Credit 1-3**  
 This course involves student participation in research conducted by faculty. Topics may be analytical and/or experimental and encourage independent study. The amount of credit will be determined before the beginning of the course. Prerequisite: Consent of instructor. **(F;S;SS)**

### **Advanced Undergraduate and Graduate**

<b>PHYS 600. Classical Mechanics</b>	<b>Credit 3(3-0)</b>
<b>PHYS 605. Mathematical Methods</b>	<b>Credit 3(3-0)</b>
<b>PHYS 615. Electromagnetic Theory I</b>	<b>Credit 3(3-0)</b>
<b>PHYS 620. Quantum Mechanics I</b>	<b>Credit 3(3-0)</b>
<b>PHYS 630. Statistical Mechanics</b>	<b>Credit 3(3-0)</b>
<b>PHYS 715. Electromagnetic Theory II</b>	<b>Credit 3(3-0)</b>
<b>PHYS 720. Quantum Mechanics II</b>	<b>Credit 3(3-0)</b>
<b>PHYS 730. Optical Properties of Matter</b>	<b>Credit 3(3-0)</b>
<b>PHYS 735. Atomic &amp; Molecular Physics</b>	<b>Credit 3(3-0)</b>
<b>PHYS 736. Spectroscopic Techniques</b>	<b>Credit 3(3-0)</b>
<b>PHYS 737. Physics of Solids</b>	<b>Credit 3(3-0)</b>
<b>PHYS 738. Nuclear Physics</b>	<b>Credit 3(3-0)</b>
<b>PHYS 739. High Energy Physics</b>	<b>Credit 3(3-0)</b>
<b>PHYS 740. Graduate Seminar</b>	<b>Variable Credit 1-3</b>
<b>PHYS 743. Experimental Methods in Physics</b>	<b>Credit 3(2-3)</b>
<b>PHYS 745. Computational Physics</b>	<b>Credit 3(2-3)</b>
<b>PHYS 750. Relativistic Quantum Mechanics I</b>	<b>Credit 3(3-0)</b>
<b>PHYS 751. Relativistic Quantum Mechanics II</b>	<b>Credit 3(3-0)</b>
<b>PHYS 760. Special Topics</b>	<b>Variable Credit 1-3</b>
<b>PHYS 770. Research</b>	<b>Variable Credit 1-9</b>
<b>PHYS 791. Masters Project</b>	<b>Variable Credit 1-6</b>
<b>PHYS 792. Masters Thesis</b>	<b>Variable Credit 1-6</b>

### **PROFESSIONAL TEACHERS PROGRAM**

**PHYS 705. Physics for Science Teachers I** **Variable Credit 1-6**  
 This course is for in service teachers. It covers fundamentals of astronomy and earth science. Full descriptive title, syllabus and the amount of credit must have received departmental approval before scheduling. Prerequisite: MATH 111 or equivalent. **(DEMAND)**

**PHYS 706. Physics for Science Teachers II** **Variable Credit 1-6**  
 This course is for in service teachers. Lecture and integrated lab study of the fundamental principles of mechanics, thermodynamics, wave motion, electricity and magnetism, optics and modern physics will be included. Full descriptive title, syllabus and the amount of credit must

have received departmental approval before scheduling. Focus: Mechanics and Thermodynamics. Prerequisite: MATH 111 or equivalent. **(DEMAND)**

**PHYS 707. Physics for Science Teachers III** **Variable Credit 1-6**  
This course is a continuation of PHYS 706. Focus: Wave motion and electricity and magnetism. Prerequisite: PHYS 706 or equivalent. **(DEMAND)**

**PHYS 708. Physics for Science Teachers IV** **Variable Credit 1-6**  
This course is a continuation of PHYS 707. Focus: Optics and modern physics. Prerequisite: PHYS 707 or equivalent. **(DEMAND)**

**PHYS 709. Physics for Science Teachers V** **Variable Credit 1-6**  
This course is a continuation of PHYS 078. Focus: Modern Physics. Prerequisite: PHYS 708 or equivalent. **(DEMAND)**

**DIRECTORY OF FACULTY**

**Abdellah Ahmidouch** ..... **Associate Professor**  
B.S., Mohammed V. University; M.S., Joseph Fourier Grenoble I University; Ph.D., University of Geneva

**Solomon Bililign** ..... **Associate Professor and Chairperson**  
B.S., M.S., Addis Ababa University; Ph.D., University of Iowa

**Samuel S. Danagouliau** ..... **Associate Professor**  
M.S., Ph.D., Yerevan Physics Institute

**Ashot Gasparian** ..... **Associate Professor**  
B.S., Ph.D., Yerevan Physics Institute

**Caesar R. Jackson** ..... **Professor and Interim Dean**  
B.E.T., Florida A&M University; M.S., University of Florida; Ph.D., North Carolina State University

**Floyd J. James** ..... **Associate Professor**  
B.S., M.S., University of North Carolina; Ph.D., University of North Carolina at Chapel Hill

**Abebe B. Kebede** ..... **Associate Professor**  
B.S., Addis Ababa University; M.A, Ph.D., Temple University

**Sekazi K. Mtingwa** ..... **Professor**  
B.S., Massachusetts Institute of Technology; M.S., Ph.D., Princeton University

**Ronald S. Pedroni** ..... **Adjunct Associate Professor**  
B.A., Jacksonville University; Ph.D., Duke University

**Thomas R. Sandin** ..... **Professor**  
B.S., Santa Clara University; M.S., Ph.D., Purdue University

**Charles A. Stone IV** ..... **Visiting Assistant Professor**  
B.S., North Carolina State University; M.S., University of Wisconsin; Ph.D., University of California

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## **Department of Political Science and Criminal Justice Program**

<http://www.poli.ncat.edu/>

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**Samuel A. Moseley, Interim Chairperson**

### **OBJECTIVES**

The specific objectives of the Political Science Program are as follows:

1. to help students develop an understanding of the operation of government at various levels.
2. to encourage students to engage in critical discourse of political and social issues.
3. to prepare students for advanced study.
4. to provide skills for employment in public and private organizations.

The specific objectives of the Criminal Justice Program are as follows:

1. to provide a broad-based liberal arts education with particular focus on the nature and causes of crime and delinquency, the prison system, the courts, the police, the juvenile justice system, and domestic violence.
2. to increase the pool of students with research skills and techniques in the field of criminal justice.
3. to provide an interdisciplinary focus of study in the field of criminal justice
4. to serve as a strategy for recruiting a larger and more diverse student body.
5. to increase the pool of talented and qualified minority students in this growing area of public service and professional practice.

Political science is the study of governments, public policies, and political behavior. Political science uses both humanistic and scientific perspectives and skills to examine public power, social transformations, the nature of democracies, elections, public opinion, constitutions, technology and society, public policy, and similar issues. The Department of Political Science offers courses in the following fields: American Government, Criminal Justice, Public Policy and Administration, Political Theory, Research Methodology, and International Affairs.

The Department of Political Science requires students to develop competence in the use of modern political technology and information management systems. Students have access to excellent computing facilities as well as access to the Political and Social Research Geographic Information Systems (GIS) Laboratory. Students learn how to design, administer, and analyze surveys by working with the Political Science and Criminal Justice Computer Assisted Telephone Interviewing Laboratory (CATI).

A Bachelor of Science degree in Criminal Justice will provide students with knowledge of the nature and causes of crime, criminal justice processes, and law enforcement. Students will be introduced to social scientific methods and theoretical models needed for analysis and critique of the criminal justice system. Students majoring in Criminal Justice will receive a broad-based interdisciplinary education with particular focus on the nature and causes of crime and delinquency, corrections, the courts, law enforcement, the juvenile justice system, and domestic violence.

The Criminal Justice Program emphasizes an interdisciplinary approach to criminal justice where the departments of political science, psychology, and sociology and social work provide a core of courses in the criminal justice curriculum. Students in this program will have the same access as Political Science majors to the Geographic Information Systems (GIS) Laboratory and the Political Science and Criminal Justice Computer Assisted Telephone Interviewing Laboratory (CATI).

### **DEGREES OFFERED**

Political Science – Bachelor of Arts

Criminal Justice – Bachelor of Science

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in the Department of Political Science and Criminal Justice Program is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

Political Science Major – Completion of a minimum of 124 semester hours of University courses. Included in the 124 semester hours are 36 hours of political science courses and 12 hours in a cognate area. A minimum grade of “C” must be attained in the major courses.

Students desiring to minor in political science must complete 18 semester hours in political science, including POLI 200 and 210.

Criminal Justice Major – Completion of a minimum of 125 semester hours of University courses. Included in the 125 hours are POLI 200, POLI 210, 36 hours of criminal justice courses and 12 hours in a cognate area. Criminal Justice majors are required to successfully complete internship requirements their senior year. A minimum grade of “C” must be attained in the major and required core courses.

Students wishing to minor in criminal justice must complete 18 semester hours in criminal justice, including CRJS 200 and CRJS 250.

### **CAREER OPPORTUNITIES**

A degree in political science prepares students for careers in government, public administration, law (for those continuing to law school), business, campaign management, foreign service, industry, interest groups, journalism, international affairs, teaching, and leadership in civic and political activities.

A baccalaureate degree in criminal justice is an asset for candidates entering the broad array of career options. Employment in the fields of law enforcement, court related occupations and corrections, criminal justice graduates can use their knowledge and research skills in very rewarding and meaningful ways. This program will also provide an interdisciplinary foundation for students seeking advancement in these careers or wishing to pursue a graduate or professional degree.



## REQUIRED MAJOR COURSES FOR POLITICAL SCIENCE

POLI 150	POLI 333	POLI 340
POLI 200	POLI 334	POLI 440
POLI 210		

Political Science Students are required to take 15 credit hours of Poli-Electives from any of the following:

POLI 400	POLI 445	POLI 504
POLI 410	POLI 446	POLI 505
POLI 415	POLI 447	POLI 541
POLI 420	POLI 448	POLI 542
POLI 430	POLI 460	POLI 543
POLI 440	POLI 499	POLI 544
POLI 444		

## CURRICULUM GUIDE FOR POLITICAL SCIENCE

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101/Higher	3-4	MATH 102/Higher	3-4
HIST 100	3	HIST 101	3
POLI 150	3	BIOL 100	4
POLI 200	<u>3</u>	POLI 210	<u>3</u>
	15-16		16-17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA	3	FOLA	3
CHEM 100 or PHYS 101	4-3	SOCI 302/ECON 305	3
ENGL 200	3	ENGL 201	3
SPCH 250	3	PHIL 260/262	3
POLI Elective	3	POLI 340	3
PHED 200	<u>2</u>	POLI Elective	<u>3</u>
	18-17		18

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
POLI 333	3	POLI 334	3
POLI 440	3	POLI Elective	3
ECON 200	3	POLI Elective	3
PSYC 320	3	ECON 201	3
African American Studies	3	African American Studies	3
Cognate Area Elective <sup>1</sup>	<u>3</u>	Cognate Area Elective	<u>3</u>
	18		18

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
POLI Elective	3	Cognate Areas Elective	3
Cognate Area Elective	3	Free Elective	<u>6-5</u>
POLI Internship <sup>2</sup> (Free Elective)	3		9-8
Global Studies	<u>3</u>		
	12		

Total Credit Hours: 124

<sup>1</sup> Students are advised to choose their cognate area requirement of twelve credit hours from one of the following disciplines: ACCT BUAD, COMM, ECON, ENGL, HIST, SOCI, TRAN, PSYC or any other area with the approval of the Department Chair. (100 level courses will not be accepted to meet the cognate area requirement.)

<sup>2</sup> POLI Internship credit will not be accepted to meet the major requirement of thirty-six (36) credit hours.

## REQUIRED MAJOR COURSES FOR CRIMINAL JUSTICE

CRJS 200  
CRJS 250  
CRJS 300

CRJS 400  
CRJS 430

CRJS 440  
CRJS 500

Criminal Justice students are required to take POLI 200 and POLI 210 and 12 hours of CRJS Electives from any of the following:

CRJS 406/SOCI 406  
CRJS 434/PSYC 434  
CRJS 470  
CRJS 503

CRJS 510  
CRJS 515  
CRJS 520

CRJS 542/POLI 542  
CRJS 543/POLI 543  
CRJS 670

## CURRICULUM GUIDE FOR CRIMINAL JUSTICE

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
POLI 200	3	POLI 210	3
ENGL 100	3	ENGL101	3
MATH 101/Higher	3-4	MATH 102/Higher	3-4
HIST 100	3	HIST 101	3
CRJS 200	3	SOCI 100	<u>3</u>
PHED 100-600	<u>1</u>		15-16
	16-17		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CRJS 250	3	CRJS 300	3
FOLA	3	FOLA	3
BIOL 100	4	CHEM 100/PHYS 101	4-3
SPCH 250	3	ECON 305	3
PHED 200	2	ENGL 201	<u>3</u>
ENGL 200	<u>3</u>		16-15
	18		

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CRJS 430	3	CRJS 440	3
Afro/Global Studies	3	Afro/Global Studies	3
ECON 200	3	ECON 201	3
PSYC 320	3	Cognate Elective	3
CRJS Elective	<u>3</u>	CRJS 400	<u>3</u>
	15		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CRJS 500	3	CRJS 500	3
CRJS Elective	3	CRJS Elective	3
CRJS Elective	3	Cognate Elective	3
Cognate Elective	3	Cognate Elective	3
Free Elective	<u>3</u>	Free Elective	<u>3</u>
	15		15

Total Credit Hours: 125

<sup>1</sup> Students are required to complete 12 semester hours in a cognate area that supports the interdisciplinary focus of Criminal Justice. Suggested areas include Political Science, Sociology, Foreign Languages, Psychology, and Economics.

<sup>2</sup> The maximum number of transferable credits is 80 semester hours from a 4-year college and 64 semester hours from a 2-year college.

The 64 semester hours earned at a North Carolina Community College will be accepted according to the Criminal Justice Articulation Agreement between The University of North Carolina System and the North Carolina Community College System

<sup>3</sup> A student must complete 6 hours of the same foreign language and CRJS 430 and 440.

## COURSE DESCRIPTIONS IN POLITICAL SCIENCE

### Undergraduate

#### **POLI 150. Introduction to Political Science Credit 3(3-0)**

This course is an introduction to major concepts in political science including political culture, socialization, ideologies, institutions, processes, public policy, human rights, and interaction among nations. (F;S)

#### **POLI 200. American Government and Politics Credit 3(3-0)**

This course introduces the student to the study of politics through an analysis of major features of the American polity. Topics to be treated include the political self-understanding of Americans, the founding of the political system, the operation of our political institutions, and the forms of political participation. (F;S;SS)

#### **POLI 210. State and Local Government Credit 3(3-0)**

This course is a study of the structure and functions of state and local government in the United States and their relationship within the federal system. Special consideration is given to contemporary problems. (F;S;SS)

#### **POLI 220. Blacks in the American Political System Credit 3(3-0)**

This course is designed primarily to facilitate the development of a frame of reference which will make it possible for students to organize and interpret political phenomena involving Black people living in the United States. Special emphasis is placed on understanding the Black predicament in this country, causes and changes. (F;SS)

#### **POLI 250. Introduction to Public Policy Credit 3(3-0)**

This course is designed to provide the student with basic knowledge of public policy. Students will survey the approaches and methods of policy studies, contemporary policy issues, and future considerations of public policies. (F;SS)

#### **POLI 310. Comparative Politics Credit 3(3-0)**

This course is a survey of the politics and governments of selected political systems highlighting their commonalities and particularities. Special consideration is given to aspects of political development. (F)

**POLI 333. Political Research Methods I****Credit 3(3-0)**

This course introduces students to qualitative and quantitative research design, problem formulation, hypothesis construction and testing. Students will learn procedures for collecting and analyzing political data. Research on a specific political subject is required. (F)

**POLI 334. Political Research Methods II****Credit 3(3-0)**

This course is a continuation of Political Research Methods I, focusing on data analysis, interpretation and computer utilization. (S)

**POLI 340. Public Administration (Formerly Pol. Sci., 443)****Credit 3(3-0)**

Emphasis is devoted to basic principles of organization, location of authority, fiscal management, personnel management, and forms of administrative action in the public service, technological and managerial advancements. (F;SS)

**POLI 350. Public Personnel Administration****Credit 3(3-0)**

This course focuses on the theory and practice of public personnel administration with emphasis on public personnel selection, training, classification, compensation, promotion and human relations. (DEMAND)

**POLI 400. Mass Political Attitudes and Behavior****Credit 3(3-0)**

This course is a study of mass political attitudes and their expression in various forms of political activity. Topics include opinion and democratic theory; social, psychological and institutional influences on political behavior; and opinion measurement and mass movements. (DEMAND)

**POLI 410. Public Policy and Technology****Credit 3(3-0)**

This course is designed primarily for students in sciences and engineering; however, it does not exclude students in other disciplines, especially business and economics. Students will study the social, economic, human, and environmental impact of technological development. The role of scientists and technologists in selected policy choices will be examined. (DEMAND)

**POLI 415. Environmental Policy****Credit 3(3-0)**

This course examines major environmental policies dealing with air pollution, water pollution, and solid wastes. Attention will be given to controversies in policy formulation, institutional arrangements for policy implementation, and the socio-economic and ecological impacts of these policies. (S)

**POLI 420. Public Budgeting****Credit 3(3-0)**

The course deals with the evolution, process, and impact of public budgeting. Special attention is given to the purpose, models, reforms and key factors involved. Budgeting is viewed from the federal, state and local levels. (DEMAND)

**POLI 430. Policy Analysis****Credit 3(3-0)**

This course is an introduction to the foundation and methods of policy analysis. Statistical and economic methods are presented with case studies. (DEMAND)

**POLI 440. Political Theory****Credit 3(3-0)**

This course provides an overview of western political philosophy from its origins in the 5<sup>th</sup> Century B.C. to the latest controversies over multiculturalism, the nature of the liberal state, the role of racial inequality in modern democracies, of this area of political science and its relevance to the field. The approach considers ancient medieval thought as a unit and modern political thought as a separate unit. (F)

**POLI 444. International Relations****Credit 3(3-0)**

This course is a comprehensive treatment of the context and content of the structure, policies and politics of nations. Concepts pertaining to the nature of the field will also be investigated, including: imperialism, colonialism, balance of power, international morality, treaties, sover-



eignty, diplomacy, tariff, war and other arrangements. The limits of international relations in the emerging era of globalism will also be explored. Prerequisite: POLI 200. (S)

**POLI 445. Problems of Contemporary Africa** **Credit 3(3-0)**

This course presents an overview of important political, economic, and social challenges transforming modern continental Africa. Course considerations include factors influencing the development of democratic institutions and practices, the debt crisis in an environment of economic change, the nature of political violence, and the continental and foreign relations of African states. (F)

**POLI 446. Politics of the Americas** **Credit 3(3-0)**

This course is designed to provide an overview of the development and operation of political systems comprising South and Central America, the Spanish-speaking Caribbean, and Mexico. Important economic and social factors affecting the nature of politics in this region will also be emphasized, including: the debt crisis, the nature of politically motivated violence, the politics of race and racial identity, and the foreign relations of these nations. (S)

**POLI 447. African American Political Theory** **Credit 3(3-0)**

This course examines the formation and development of political theory in the African American community from its classical period to the Post-Civil Rights Era. The course presents distinct periods in the development of African American political thought, examines major themes and debates of each period, and explores the contributions of important theorists. (S)

**POLI 448. Politics of Transportation** **Credit 3(3-0)**

This course includes an analysis of the political roots of various transportation problems, such as highway location issues, mass transit issues, and the interest group struggle of transportation innovation. The working mechanisms of federal, state and local transportation related units will also be considered. Case studies of local, regional and national issues will be included. Prerequisite: Junior standing. (DEMAND)

**POLI 460. Southern Politics** **Credit 3(3-0)**

The course presents an examination of political patterns and recent trends within the states of the former confederacy. Topics include southern race relations, African American political participation, demographic changes, party realignment and competitiveness, the Civil Rights movement, and the impact of the South on national politics. (S)

**POLI 499. Internship** **Credit 3(3-0)**

This course includes supervised internship in public and private agencies for political science majors. Prerequisites: POLI 200 and 210. (DEMAND)

**POLI 504. Independent Study** **Credit 3(3-0)**

Senior political science majors who have exhibited facility for independent study and attained a minimum grade point average of 3.0 in their major may arrange to investigate an area not covered in the regular curriculum. Permission of the supervising instructor and the Department Chairperson is required. (DEMAND)

**POLI 505. Honors Seminar in Political Science** **Credit 3(3-0)**

This course includes a thorough examination of selected political works, primarily paperbacks. A treatment of selected political philosophies and ideas for informal discussion will also be included. Several critical reviews will be required. Prerequisite: Seniors only. (DEMAND)

**POLI 541. Party Politics and Pressure Groups** **Credit 3(3-0)**

This course deals with modern political parties in the United States as instruments of popular government. Special emphasis is placed upon party structure, functions and operations as they relate to African Americans. Prerequisite: POLI 200. (DEMAND)

**POLI 542. American Constitutional Law** **Credit 3(3-0)**

This course is a case study of major Supreme Court Decisions, the Judiciary, the Congress, the President, the Federal System, the First Amendment Freedoms and Due Process Rights. (F)

**POLI 543. Civil Liberties****Credit 3(3-0)**

This course is a study of major Supreme Court decisions interpreting the Bill of Rights (the First Ten Amendments) and the subsequent amendments dealing with freedom and equality. Rulings of the Warren and Burger Courts will be given special attention. Prerequisite: Juniors and seniors only. (S)

**POLI 544. International Organization****Credit 3(3-0)**

This course analyzes the role of international organizations in world politics. Particular emphasis is given to the various approaches of international organizations in fostering peace and economic and social cooperation. Some attention will be given to the United Nations system as well as such defense, political, and economic arrangements as NATO, OAS, SEATO and the European communities. (S)

**Advanced Undergraduate and Graduate****POLI 604. Directed Study/Research****Credit 3(3-0)**

This course includes directed study or research on a specific topic in political science. (DEMAND)

**POLI 642. Modern Political Theory****Credit 3(3-0)**

This course examines selected treatments of the state as a controversial concept. The course focuses on the works of Machiavelli, Hobbes, Spinoza, Rousseau, Burke, Mill, Hegel, Marx, Dewey, Rawls and Reed. (DEMAND)

**POLI 643. Urban Politics and Government****Credit 3(3-0)**

This course is a detailed analysis of the urban political arena including political machinery, economic forces and political structures of local governmental units. (DEMAND)

**POLI 644. International Law****Credit 3(3-0)**

This course is a study of the major principles and practices in the development of the Law of Nations, utilizing significant cases for purposes of clarification. Prerequisites: POLI 200 and 444. (DEMAND)

**POLI 645. American Foreign Policy-1945 to Present****Credit 3(3-0)**

This course includes an examination of forces and policies that have emerged from Potsdam, Yalta, and World War II. Emphasis will be on understanding the policies that were formulated, why they were formulated, the consequences of their formulation, and the alternative policies that may have come about. Prerequisites: Survey course in American History, American Diplomatic History, and consent of instructor. (DEMAND)

**POLI 646. The Politics of Developing Nations****Credit 3(3-0)**

Political structures and administrative practices of selected countries in Africa, Latin America, Asia, analysis of particular cultural, social and economic variables peculiar to the nations will be studied. (DEMAND)

**POLI 653. Urban Problems****Credit 3(3-0)**

This course presents an analysis of major problems in contemporary urban America. The course also includes an examination of their causes, effects and possible solutions. (DEMAND)

**CRIMINAL JUSTICE****CRJS 200. Introduction to Criminal Justice****Credit 3(3-0)**

This course is designed to provide freshmen and sophomore students with knowledge of terminology, classification systems, trends, and theories of criminal justice. (F,S, SS)

**CRJS 250. Introduction to Corrections****Credit 3(3-0)**

This course provides an overview of correctional philosophies, practices, and procedures. (F,S,SS)

- CRJS 300. The Law Enforcement Process** **Credit 3(3-0)**  
 This course surveys the field of law enforcement concentrating on the police, emphasizing enforcement, maintaining order, and protecting individual rights that are guaranteed under the constitution. Prerequisite: CRJS 200. (F,S)
- CRJS 400. Police Administration** **Credit 3(3-0)**  
 This course examines organizational theories and administrative functions with direct application to criminal justice agencies. (F,S)
- CRJS 406./SOC 406. Criminology** **Credit 3(3-0)**  
 The genesis and origin of crime and an analysis of theories of criminal behavior will be studied. (DEMAND)
- CRJS 430. Research Methods in Criminal Justice** **Credit 3(3-0)**  
 This course introduces students to research methods with a special application to current criminal justice issues. Attention is given to analysis with data from uniform crime reports and national crime surveys. Prerequisite: Junior standing or permission of instructor. (F,S,SS)
- CRJS 434./PSYC 434. Abnormal Psychology** **Credit 3(3-0)**  
 Behavior deviations and psychological disorders occurring during the several developmental stages; basic concepts employed in psychopathology, mental hygiene, and psychiatry. (F,S,SS)
- CRJS 440. GIS for the Social Sciences** **Credit 3(3-0)**  
 This course examines the basic elements of GIS; collecting, transforming, recording, and merging data for GIS analysis; and GIS data analysis methods. Special attention will be given to research projects on police apprehensions, traffic violations, spatial housing patterns, and environmental racism. Prerequisites: Junior standing or permission of instructor. (F,S,SS)
- CRJS 470. Criminal Procedure** **Credit 3(3-0)**  
 This course examines the constitutional provisions on which the due process rights are based; the rules and procedures that govern the criminal justice process from arrest through trial and sentencing, and the methods of imposing liability on criminal justice personnel for violations of constitutional and other legal rights granted to citizens. Prerequisite: CRJS 200 (F,S)
- CRJS 500. Internship** **Credit 3(1-3)**  
 This course provides an opportunity for practical experience in various criminal justice agencies. Interns are required to participate in a one-hour weekly seminar. Prerequisites: Senior standing and permission of internship coordinator. (F,S,SS)
- CRJS 503/SOWK 503. Juvenile Delinquency** **Credit 3(3-0)**  
 This course is the study of sociological and psychological explanations relative to the causes and rehabilitation of juvenile delinquents, probation and treatment of juveniles within the criminal justice system. (F)
- CRJS 510. Victimology** **Credit 3(3-0)**  
 This course exposes students to the role of victims in crimes, their treatment by the criminal justice system, victim assistance, and victim compensation. Sexual battery and domestic violence are also covered in the course. Prerequisite: CRJS 200 (S)
- CRJS 515. Alternatives to Incarceration** **Credit 3(3-0)**  
 This course explores alternatives to imprisonment and intermediate sanctions, including probation, parole, diversion and other community based corrections. Students will also be introduced to theories of rehabilitation, treatment, and corrections. (S)
- CRJS 520. Minorities and the Criminal Justice System** **Credit 3(3-0)**  
 This course provides a survey of minority relations and criminal justice adjudication in America. The course focuses on minority/majority relations and how these sentiments impact on the criminal justice process. Prerequisite: CRJS 200. (F)



**CRJS 542./POLI 542. American Constitutional Law** **Credit 3(3-0)**

This course is a case study of major Supreme Court Decisions, the Judiciary, the Congress, the President, the Federal System, the First Amendment Freedoms and Due Process Rights. (F)

**CRJS 543./POLI 543. Civil Liberties** **Credit 3(3-0)**

This course is a study of major Supreme Court decisions, interpreting the Bill of Rights (the First Ten Amendments) and the subsequent amendments dealing with freedom and equality.

Prerequisite: Junior or Senior standing. (S)

**Advanced Undergraduate and Graduate**

**CRJS 670./SOWK 670. Law and Society** **Credit 3(3-0)**

This course examines selected and representative forms of social justice and injustices; and barriers to opportunities for legal redress, as related to contemporary issues. Prerequisite: Senior or graduate standing (F,S,SS)

**DIRECTORY OF FACULTY**

**Claude W. Barnes, Jr.** ..... **Associate Professor and Associate Dean**

B.A., North Carolina A&T State University; M.A., Ph.D., Clark Atlanta University

**Margaret Dudley** ..... **Adjunct Instructor**

B.A., Howard University, J.D., Howard University

**Joseph Green** ..... **Adjunct Assistant Professor**

B.S., M.A., Bowie State University, Ph.D., Howard University

**James Howerton** ..... **Adjunct Instructor**

B.A., North Carolina A&T State University, M.A., University of North Carolina at Chapel Hill

**Ryan Maltese** ..... **Adjunct Instructor**

B.A., Oberlin College, J.D., North Carolina Central University

**Samuel A. Moseley** ..... **Professor and Interim Chairperson**

B.A., North Carolina A&T State University; M.A., Ph.D., Ohio State University

**Phung Nguyen** ..... **Associate Professor**

B.A., M.A., National School of Administration, Saigon; M.B.A., Dalat University, Saigon; M.A., Ph.D., Duke University

**James C. Renick** ..... **Professor and Chancellor**

B.A., Central State University, M.S.W., Kansas University, Ph.D., Florida State University

**Amarjit Singh** ..... **Professor (Emeritus)**

B.A., Punjab University; LL.B., University of Delhi; M.I.S., Ph.D., Claremont Graduate School

**James D. Steele** ..... **Associate Professor**

BA., Morgan State University; M.A., Ph.D., Atlanta University



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## Department of Psychology

<http://www.ncat.edu/~psych>

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**George S. Robinson, Jr., Chairperson**

### OBJECTIVES

The objectives of the Psychology Program are as follows:

1. to provide the highest quality of instruction that will result in employment at the baccalaureate level, or entrance to graduate school.
2. to help students develop analytical, critical thinking and problem solving skills in all areas of psychology.
3. to enhance written and oral presentation skills.
4. to develop research and quantitative analysis skills.
5. to enhance interpersonal skills that will enable students to recognize, understand and appreciate the diversity in human behavior.
6. to enhance the awareness for the needs of human services in the community.

### DEGREE OFFERED

Psychology – Bachelor of Arts

### DEPARTMENTAL REQUIREMENTS

Psychology major – The major in psychology must complete 124 semester hours of University courses. Included in the 124 semester hours are 55 hours of general education requirements, 47 hours of psychology courses, and 22 hours of free electives.

The Minor in Psychology – Students desiring to minor in psychology must complete PSYC 242, PSYC 320 or PSYC 321, PSYC 322, and an additional 15 semester hours in psychology.

### CAREER OPPORTUNITIES

To function as a professional psychologist, it is necessary to complete graduate training in the discipline. However, the baccalaureate degree can lead to career and job opportunities in child care, human and social services, military services, law enforcement and criminal justice, and mental health services, to name a few.

### REQUIRED MAJOR COURSES FOR PSYCHOLOGY

PSYC 242	PSYC 440	PSYC 420
PSYC 322	PSYC 542	PSYC 439
PSYC 325 or 526	PSYC 321	PSYC 540, 541, or 550
PSYC 434	PSYC 324	PSYC 544

### PSYCHOLOGY ELECTIVES – 9 CREDIT HOURS FROM BELOW:

PSYC 325 or 526	PSYC 545	PSYC 500
(if not used above)	PSYC 645	PSYC 644
PSYC 540, PSYC 541,	PSYC 445	
PSYC 550 (if not used above)		

## CURRICULUM GUIDE IN PSYCHOLOGY

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 100	4	CHEM 100	3
ENGL 100	3	CHEM 110	1
HIST (Global Studies)	3	ENGL 101	3
MATH 101	3	PSYC 321	3
PSYC 242	3	MATH 102	3
	16	HIST (African American)	3
			16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA I	3	FOLA II	3
ENGL 200	3	ENGL 201	3
SPCH 250	3	PHED 200	2
PSYC 322	4	PSYC 325 or 526	3
PSYC 324	3	PSYC 440	4
	16		15

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PSYC 420	3	BIOL 361	4
SOCI 100	3	PSYC 439	3
Humanities Elective	3	PSYC 434	3
PSYC Elective 1	3	Free Elective 2	3
Free Elective 1	3	Free Elective 3	2
PHED activity I	1	PHED Activity II	1
	16		16

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PSYC 542	3	Free Elective 7	3
Free Elective 4	3	Free Electives 8	2
Free Elective 5	3	PSYC Elective 3	3
Free Elective 6	3	PSYC 540, 541, or 550	3
PSYC Elective 2	3	PSYC 544	3
	15		14

Total Credit Hours: 124

## COURSE DESCRIPTIONS IN PSYCHOLOGY

### **PSYC 242. Information Processing Techniques in Behavioral Research      Credit 3(2-2)**

This course is an exploration of the ability of computers to assist in behavioral research. Included are literature review (bibliographic search), stimulus presentation and response recording (programming and data management), data analysis (spreadsheets and statistical packages), data presentation (graphics), and report writing (word processing). (F;S;SS)

### **PSYC 320. General Psychology      Credit 3(3-0)**

This course includes an introduction to psychology as a life science especially designed for the major in areas other than psychology. Topics given major consideration include maturation and development-motivation, emotion, and personality; mental health, intelligence and aptitude; perception and attention; learning, forgetting, language, and thinking; social influence, attitudes, and beliefs, and vocational adjustment. PSYC 320 or PSYC 321 serves as a prerequisite for all psychology courses except for PSYC 242. (F;S;SS)

**PSYC 321. Elementary Psychology** **Credit 3(3-0)**

This course is an introduction to psychology as a behavioral science required of the major in psychology with enrollment restricted to such majors. Major areas of consideration include maturation and development, nervous system and internal environment; physiological basis of behavior; motivation, emotion, and personality; and psychological testing. (F;S;SS)

**PSYC 322. Statistical Methods** **Credit 4(3-2)**

This course is an analysis and interpretation of research data. Descriptive statistics (frequency distributions, centrality, variability, and correlation of measures), introduction to statistical inferences (normal curve sampling theory, chi square tests of statistical hypotheses, t-tests, analysis of variance will be included). Prerequisite: PSYC 242. (F;S;SS)

**PSYC 324. Developmental Psychology I (Child)** **Credit 3(2-2)**

This course is a comprehensive study of the physical, social, emotional, personality, language, and intellectual development of the child from birth through early childhood. (F;S;SS)

**PSYC 325. Developmental Psychology II (Adolescent)** **Credit 3(3-0)**

This course is a study of behavior during the culturally and biologically produced transition period between childhood and adulthood. Emphasis is on the variety of alternative adjustments that are being made. Aspects of behavior include physical, cognitive, friendships, family, identification, sexuality, hazards to well being, schools and curriculum, and moral development. (F;S;SS)

**PSYC 420. Social Psychology** **Credit 3(3-0)**

This is an introduction to the study of the behavior of the individual in relation to factors in his social environment. Socialization, enculturation, attitude formation and modification, social influence on perceptual and conceptual processes, and social interaction will also be studied. (F;S;SS)

**PSYC 434. Abnormal Psychology** **Credit 3(3-0)**

Behavior deviations and psychological disorders occurring during the several developmental stages; basic concepts employed in psychopathology, mental hygiene, and psychiatry will be studied. (F;S;SS)

**PSYC 439. Theories of Personality** **Credit 3(3-0)**

Contemporary theoretical formulations of the structure and development of personality and their empirical bases will be covered. (F;S;SS)

**PSYC 440. Introduction to Psychological Research** **Credit 4(3-2)**

This course is a survey of various research methods with an emphasis on experimental design, instrumentation, and the collection, analysis, interpretation, and reporting of research data. Prerequisite: PSYC 322 or equivalent. (F;S;SS)

**PSYC 445. Industrial Psychology** **Credit 3(2-2)**

A consideration of the significance of individual differences in industry-employee selection and training- reduction of monotony and fatigue and the promotion of efficiency; accident prevention; and psychological factors in employee turnovers will be included. (F;S;SS)

**PSYC 500. Independent Study** **Credit 3-6**

Independent study on a specific topic or area in behavioral science is required. Prerequisite: Permission of the instructor. (F;S;SS)

**PSYC 526. Developmental Psychology III (Adult)** **Credit 3(3-0)**

This is a study of those psychological processes of development occurring from the end of adolescence and extending through the life span, thus including early, middle, and late adulthood and senescence or old age. Considerations will be given to physical, cognitive, and social aspects, sex, personality traits, change of lives, retirement, and the process of aging. (F;S;SS)

- PSYC 540. Physiological Psychology**
**Credit 3(2-2)**

This course is a study of the physiological and chemical processes (and their anatomical substrates) that intervene between the arrival of sensory impulses in the central nervous system and the elaboration of responses to them. Prerequisite: BIOL 361. (F;S;SS)
- PSYC 541. Human Learning and Cognition**
**Credit 3(3-0)**

This course provides an exploration of general principles of learning and memory along with their practical applications. Coverage will include simple (conditioning) to complex (thinking and problem solving) aspects of human behavior and cognitive activity with data and interpretations from several points of view presented. (F;S;SS)
- PSYC 542. Seminar in Psychology**
**Credit 3(3-0)**

A study of selected major systematic views and theoretical issues in psychology will be included. Each student participates in supervised research in psychological journals and other materials leading to an oral presentation and written paper on a substantive view or issue in psychology. (F;S;SS)
- PSYC 544. Psychological Testing**
**Credit 3(2-2)**

This course emphasizes the principles of measurement of psychological attributes; an examination of factors essential for a reliable and valid measuring instrument with an emphasis on the important role they play in producing their effects. There will be discussions and pre-clinical experiences with the more valid tests available in the areas of personality, aptitude, attitude, interests and intelligence testing. Prerequisite: PSYC 322. (F;S;SS)
- PSYC 545. History and Systems in Psychology**
**Credit 3(3-0)**

This course is a survey of the philosophical and scientific origins of contemporary theories of behavior including consideration of the schools and systems of thought which have emerged. (F;S;SS)
- PSYC 550. Psychology of Animal Behavior**
**Credit 3(3-0)**

This course is a study of various types of animal behaviors such as communication, aggression, feeding, sexual behavior, maternal behavior, territoriality, socialization, learning processes, and responses to stressors, and how heredity and environment affect these behaviors, with emphasis on domestic animals and their often "unnatural" environment. Prerequisite: At least junior standing. (DEMAND)
- PSYC 644. Applied Health Psychology**
**Credit 3(2-2)**

The utilization of psychology concerning the diagnosis, treatment, and prevention of physical disorder (e.g. hypertension) and disease from a behavioral and/or psychological perspective will be included. Prerequisite: Junior or senior standing or permission of the instructor. (F;S;SS)
- PSYC 645. Behavior Modification**
**Credit 3(3-0)**

This course is a survey of relevant research and techniques making use of either learning theory or behavior principles in the treatment of deviant behavior. Special emphasis is placed on the use of operant conditioning procedures in the prevention and treatment of abnormal behavior. (F;S;SS)

### DIRECTORY OF FACULTY

Full-time	
Susie Edwards .....	Assistant Professor
B.A., M.A., Ph.D., University of Miami	
Phyllis Ford-Booker .....	Associate Professor
B.S., M.S., Ph.D., Howard University	



- Alvin L. Keyes** ..... **Associate Professor**  
 B.A., Wake Forest University; M.A., Ph.D., University of North Carolina at Greensboro
- Anthony R. Perry** ..... **Associate Professor**  
 B.A., M.A., California State University, Sacramento; Ph.D., Brandeis University; Post-doctoral Fellow, University of Southern California
- George S. Robinson, Jr.** ..... **Associate Professor and Chairperson**  
 B.A., North Carolina A&T State University; Ph.D., University of North Carolina at Chapel Hill; Post-doctoral Fellow, National Institutes of Health and University of North Carolina at Chapel Hill
- Susan Schumacher** ..... **Associate Professor**  
 B.A., Roanoke College; M.A., Hollins College; Ph.D., University of North Carolina at Greensboro
- Sarla Sharma** ..... **Professor**  
 B.A., Banaras Hindu University; M.A., University of Chicago; Ed.D., University of North Carolina at Greensboro

#### **Part-time**

- Roxanna Anderson**  
 B.A., Ph.D., New York University
- Audrey Campbell**  
 B.A., University of San Francisco, M.A., Ph.D., Psychological Studies Institute
- Marvin Hall**  
 B.A., M.S., North Carolina A&T State University, Ed.D., Western Michigan University

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## Department of Sociology and Social Work

<http://ncat.edu/~sociolog/>

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**Sarah V. Kirk, Chairperson**

### OBJECTIVES

The objectives of the Social Work Program are as follows:

- 1) to prepare students for careers as generalist social workers,
- 2) to prepare students for graduate programs in social work or other related human service disciplines,
- 3) to provide courses for employed social work personnel who wish to upgrade their social work competencies in the delivery of services. This group includes those seeking certification in school social work, and
- 4) to provide selected social work courses for non-social work majors.

The objectives of the Sociology Program are as follows:

- 1) to provide students with analytic and systematic skills necessary to understand the problems inherent in societal relationships and to subsequently attempt to solve them,
- 2) to prepare students for graduate study in the discipline,
- 3) To provide a sociological background for departmental, university and college of arts and sciences' students who must meet major specific, general education or liberal arts requirements. It should be noted that each major in social work must complete a minimum of 27-30 credits in sociology in addition to any free elective sociology courses that he/she may choose.

### DEGREES OFFERED

Sociology – Bachelor of Arts

Social Work – Bachelor of Social Work

Social Work – Master of Social Work\*

\* See the Graduate School Bulletin (Jointly administered with UNCG)

### GENERAL PROGRAM REQUIREMENTS

Entering the Department: All entering freshmen, transfer students and students desiring to change their major to Social Work (from another major) must meet with the undergraduate coordinator or the chairperson for an **INTAKE INTERVIEW**. They *must* bring the following materials with them to the interview: (1) the results of the Sixteen Personality Factor Test and the COPS test given by the Counseling Center; (2) a print-out from the Registrar regarding their grades and current GPA (if they are “change of major” students). Transfer students must provide a statement from the Admissions Office of the credits accepted by North Carolina A&T State University; (3) a brief essay (typewritten) that describes the personal background of the student, giving reason for selecting the major, their career goals and how the major fits into those choices; and (4) at the end of the interview, the student and the administrator will sign the *Undergraduate Student Admissions Contract*. **No academic credit is given for previous life experience.**

## SOCIAL WORK PROGRAM TERMINATION POLICY

Program policies and procedures for terminating a student are as follows:

1. The University Administration (The Registrar's Office) monitors all students who in spite of ongoing advising and support of faculty continue to maintain an unacceptable academic average. These students are notified that they are on academic probation. This requires the student to contract with the department for the next semester not to exceed 12 credit hours.
2. If a student's grades do not improve, the Registrar's Office will notify the student of suspension from the University and that he/she will not be readmitted for a period of one year.
3. If faculty agrees that there is a student, who may or may not be experiencing academic problems but appears ill suited for a career in social work, the advisor meets with the student to discuss the "problem areas" observed. These areas could include, but are not limited to: 1) negative attitudes towards different populations, (2) lack of commitment in their volunteer assignments, (3) some perceived emotional problem exhibited by uncontrollable crying and/or verbal attacks on peers (in classroom settings), and (4) indication of untreated substance abuse. If the counsel provided by the advisor and/or the next level professional (University's Counseling Center or private therapist) is deemed not successful and would appear to cause the student and the potential clients added stress, he/she is then counseled regarding other majors and other career options before he/she moves into junior status. A program was designed and instituted to address initial concerns regarding a student's choice of social work as a career as indicated (through the COPS and 16 Factor Inventory) and the interview.
4. The field instruction program provides another opportunity to "select out" students during the application process which occurs during the junior year. Should the student be denied admission to the field, he/she has the right to invoke the appeals process. The Appeals Committee is made up of faculty and students from both field instruction programs. (NCA&TSU and UNCG) The student may select a faculty member or student to serve as his/her advocate. Professional liability insurance is required before entering the Field.
5. If a student still persists in remaining in the major against all counsel, the issue of nonavailability of a field placement and the department's responsibility to indicate concerns to prospective employers and/or graduate schools is discussed with the student.
6. All students must successfully pass a comprehensive Exit Exam administered in SOWK 570 Senior Seminar before recommendation for graduation.
7. It should be noted that students have the right to appeal through the departmental, College of Arts and Sciences' and the University's channels any program decision that they perceive will adversely affect them.

NOTE: All students must maintain a cumulative 2.3 grade point average to remain in the BSW program. Transfer and Change of Major students must complete the intake interview and receive a positive recommendation from the departmental faculty before the Change of Major form will be signed by the Chairperson or her designate.

Junior Year Interview: All departmental majors who have reached the status of juniors must no later than during the second semester (of the junior year), have a meeting with a panel of departmental faculty. They must bring the following to the meeting: (1) a completed

copy of the "Field Application Form" (for Social Work majors) or a completed copy of the "Sociology Majors Interview/Assessment Form"; and (2) a short essay (typewritten) that outlines the students' progress toward completing requirements for their degree (BA or BSW), and discuss progress toward their career goals.

**Comprehensive Examination:** All students prior to graduation from the department must pass the Comprehensive Exam, which is given in the Senior Seminar class during the second semester of the senior year. Those who do not pass the exam will not be able to pass the Senior Seminar course with a "C" or better and hence will not be able to meet all the requirements for graduation from the University. The exam will be administered during the midsemester and again, for those who need it, during regular exam time. **NOTE:** the Senior Seminar course can be repeated, if necessary, through Independent Study if recommended by the faculty).

## **DEPARTMENTAL REQUIREMENTS**

**Sociology Major** — Completion of a minimum of 128 semester hours of University courses. Included in the 128 semester hours are 46 hours of sociology. A minimum grade of "C" must be achieved in these courses; sociology majors are required to complete an 18 hour concentration.

**Social Work Major** — Completion of a minimum of 127 semester hours of University courses. Included in the 127 semester hours are 41 semester hours of Social Work. A minimum grade of "C" must be achieved in major courses. Social Work majors are required to successfully complete an internship their senior year.

**Certification in School Social Work** requires completion of the Social Work Curriculum plus 9-12 additional hours in Social Work and 3 additional hours in Education. A minimum grade of "C" must be achieved in all major courses. All English and Speech courses require a minimum grade of "C." Students must have a 2.8 GPA.

## **CAREER OPPORTUNITIES**

A degree in Social Work provides students with the competencies essential for immediate entry as a generalist into the professional field of social work. Career opportunities include but are not limited to departments of social services, school social work, mental health agencies and the criminal justice system. The Social Work Program is accredited by the Council on Social Work Education, and in cooperation with the School of Education is authorized to recommend students for Baccalaureate Certification in School Social Work.

A degree in sociology is preparatory for graduate study in sociology and can serve as the basic preparation for study of law, social work and public administration, entry into government service positions, applied research and education.

## **REQUIRED MAJOR COURSES FOR SOCIOLOGY**

SOCI 100	SOCI 308	SOWK 503
SOCI 101	SOCI 401	SOWK 570
SOCI 203	SOCI 403	SOWK 575
SOCI 204	SOCI 406	SOSW 625
SOCI 300	SOCI 473	SOWK 674
SOCI 303	SOCI 501	SOCI/SOWK Elective (6 hrs.)



## CURRICULUM GUIDE FOR SOCIOLOGY

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SOCI 100	3	ENGL 101	3
BIOL 100	4	MATH 102	3
MATH 101(100 if remedial needed)	3	HIST 101	3
ENGL 100 (099 if remedial is needed)	3	SOCI 101	3
PHED 200	<u>2</u>	SPCH 250	<u>3</u>
	15		15

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EASC 201	3	FOLA	3
FOLA	3	SOWK 414 or African-	
SOCI 203	3	American History Course	3
Free Elective	3	SOCI 204	3
PHIL 262	3	SOCI 303	3
SOCI 401	<u>3</u>	SOCI/SOWK Elective	<u>3</u>
	18		15

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SOCI 403	3	American, English or African	
ENGL 300	3	American Literature	3
SOCI 300	3	SOCI 308 or 501	3
Concentration	6	SOCI 402	3
Sociology/Social Work Elective	<u>3</u>	Concentration	<u>6</u>
	18		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SOCI 575	3	SOWK 570*	3
SOCI 406 or 503	3	Concentration	3
Concentration	3	SOWK 674or SOSW 625	3-5
Free Electives/SOSW 625	<u>3-5</u>	SOCI 473	3
	12-14	SOWK/SOCI Elec./Free Elec.	<u>3</u>
			15-17

Total Credit Hours: 128

\* This course includes the program's comprehensive exam.

### REQUIRED MAJOR COURSES FOR SOCIAL WORK

SOCI 100	SOCI 401	SOWK 520
SOCI 101	SOCI 402	SOWK 570
SOWK 133	SOCI 403	SOWK 571
SOCI 203	SOWK 410	SOWK 674
SOCI 204	SOWK 507	SOWK/SOCI Electives (6 hrs.)
SOWK 333	SOWK 519	

## CURRICULUM GUIDE FOR SOCIAL WORK

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100 (099 if remedial is needed)	3	ENGL 101	3
SOCI 100	3	MATH 102 (101 if MATH 100 is needed)	3
BIOL 100	4	HIST 101	3
MATH 101 (100 if remedial needed)	3	POLI 200 or ECON 200	3
SOWK 133*	<u>3</u>	SOCI 101	<u>3</u>
	16		15

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EASC 201	3	SOWK 333	3
SOCI 203	3	SPCH 250	3
FOLA	3	PSYC 324, 325 or 434	3
PSYC 320	3	FOLA	3
PHED 200	2	SOCI 204	3
POLI 210 or ECON 201	<u>3</u>	Free Elective	<u>3</u>
	17		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 300	3	SOCI 402	3
SOCI 401	3	SOWK 414 or African American	
PHIL 262	3	History Course	3
SOWK 410 (prior to SOWK 411)	3	SOWK 411	3
SOWK Elective	<u>3</u>	POLI 340 or BUAD 422/350	3
	15	American, English or African	
		American Literature	<u>3</u>
			15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SOWK 507	5	SOWK 520	5
SOWK 519	3	SOWK 571	3
SOCI 403	3	SOWK 674	3
Free Elective	<u>3</u>	SOWK 570**	3
	14	SOWK Elective	<u>3</u>
			17

Total Credit Hours: 127

\* This course must be successfully completed prior to enrolling in any other Social Work courses.

\*\*This course includes the program's comprehensive exam.

All transfer social work credits must come from a CSWE accredited program.

## COURSE DESCRIPTIONS IN SOCIOLOGY AND SOCIAL WORK SOCIOLOGY

### **SOCI 100. Principles of Sociology** **Credit 3(3-0)**

Basic concepts and principles in sociology as they are used to examine patterned and recurrent forms of social behavior will be studied. (F;S)

### **SOCI 101. Basic Quantitative Writing and Computer Skills in Sociology** **Credit 3(3-0)**

This course, to be taken concurrently with SOCI 100 – Principles of Sociology, is designed to provide students with basic computer skills needed to summarize and describe sociological data. The ability to perform elementary calculations, such as percentages, proportions, and ratios, along with utilization of graphing techniques is a prime objective. Other descriptive/summary statistical techniques emphasized include construction and interpretation of one- and two-variable tables. A third objective is to ensure that students can write a clear report in standard English on the methods and findings of elementary research. (F;S)

### **SOCI 203. Social Statistics I** **Credit 3(3-0)**

This course is an introduction to elementary statistical reasoning, descriptive statistics, frequency distribution, graphics, measures of central tendency and dispersion. Correlation and regression techniques are also taught. (F;S)

### **SOCI 204. Social Problems** **Credit 3(3-0)**

Major social problems in American society and their relationship to social structures will be studied. Prerequisite: SOCI 100, concurrent, Statistics I. (F;S)

**SOCI 303. Social Statistics II****Credit 3 (3-0)**

Inferential statistics, probability, sampling distribution tests of significance as well as measures of association, analysis of variance, multivariate correlational analysis are taught. Prerequisite: SOCI 302. (S)

**SOCI 304. Social Aspects of Human Sexuality****Credit 3(3-0)**

Social aspects of human sexuality and American sexual behavior and its influence on life styles will be studied. Emphasis will be on social roles. (S; DEMAND)

**SOCI 305. Reading for Honors in Sociology****Credit 3(3-0)**

This course includes intensive and extensive library research on topics in Sociology. Prerequisite: "B" average. (DEMAND)

**SOCI 308. Sociology of Marriage and the Family****Credit 3(3-0)**

The family as a social institution and family types in cross-cultural perspectives will be studied. (F)

**SOCI 401. Origins of Social Thought****Credit 3(3-0)**

This course includes a review of the major historical sources, nature and growth of social thought as well as an introduction to the emergence of Sociological Theory in Europe and America in the 19th and early 20th centuries. (F)

**SOCI 402. Social Theories****Credit 3(3-0)**

Social thought and theory in its development from Comte to the present will be studied. Prerequisite: SOCI 203, SOCI 204, and SOCI 401. (S)

**SOCI 403. Social Research Method I****Credit 3 (3-0)**

This is an introductory course in social research methods; basic theory, principles and practical applications of data collection, analysis and interpretation. Includes study of research designs, measurement techniques, and sampling techniques used in survey research methods. Prerequisite: SOCI 203 or concurrent. (F)

**SOCI 406. Criminology****Credit 3(3-0)**

The genesis and origin of crime and an analysis of theories of criminal behavior will be studied. (DEMAND)

**SOCI 408. Independent Study I****Credit 3(3-0)**

This course includes independent research on a specific topic or a delineated area in sociology. Prerequisite: Permission of the instructor. (F;S)

**SOWK 412. Major Problems of Family Functioning****Credit 3(3-0)**

This course examines the dynamics of families experiencing major dysfunctions related to poverty, violence, the effects of deviant family members, and the social programs and policies relating to these problem areas. This course will enhance the student's social work practice with families by increasing understanding of dysfunctional effects of these problems on the family system and its individual members and the relationship of policies and programs to the enhancement or deterioration of family life. (S)

**SOWK 413. The Community****Credit 3(3-0)**

This course is a study of the social areas commonly defined as communities, and analyses of the social processes that occur within their boundaries. Community organization skills are taught as a vehicle to address social ills. (DEMAND)

**SOWK 423. Introduction to Family Therapy****Credit 3(3-0)**

This course is designed to introduce the student to the rapidly developing field of family therapy. A brief overview of family therapy will be presented, along with explanation of the similarities and the difference with other therapies. Several models of practices and technique will be presented. Prerequisites: SOCI 308 and SOWK 412. (DEMAND)

**SOCI 473. Introduction to Population Studies****Credit 3(3-0)**

This course includes a review of demographic processes; growth, fertility, mortality and migration in human populations. Focus on causes and consequences of demographic change in relation to social change and economic development. (S)

**SOCI 501. Social Stratification****Credit 3(3-0)**

This is a study of social inequalities and differentiation as related to social structures and social systems. Prerequisite: SOCI 203. (DEMAND)

**SOWK 503. Juvenile Delinquency****Credit 3(3-0)**

This course is the study of sociological and psychological explanation relative to the causes and rehabilitation of juvenile delinquents, probation and treatment of juveniles within the criminal justice system. (F)

**SOCI 570. Senior Seminar****Credit 3(3-0)**

Research and discussions of professional and field issues related to sociology and social work will be studied. Prerequisite: Senior standing. (S)

**SOCI 575. Research Methods II****Credit 3(3-0)**

This course is continuation of SOCI 403. Prerequisites: Senior or graduate standing; minimum of 6 to 9 credits in statistics and research. (S)

**SOCI 672. Selected Issues in Sociology****Credit 3(3-0)**

Topics of current interest to sociologists and the student body are explored. (S)

**SOWK 674. Evaluation of Social Programs \*****Credit 3(3-0)**

The main focus is on evaluative research methodology; research designs, measurement of program effectiveness and cost effectiveness analysis. Includes case studies of needs assessment, program monitoring and impact measurement in human services. Prerequisite: Social Statistic (S203) and Research Methods (S403). (S)

**SOCIAL WORK****SOWK 133. Social Professions, Fields and Services****Credit 3(3-0)**

This course is designed to introduce students to the human services professions with emphasis on social work as a profession. It explores the human service professions from historical, sociological, political, and economic viewpoints. (F;S)

**SOWK 325. Honors Seminar in Social Service****Credit 3(3-0)**

Selected topics in social welfare are extensively studied and discussed. Prerequisites: Junior standing and "B" average. (DEMAND)

**SOWK 333. Social Welfare****Credit 3(3-0)**

This course examines social welfare legislation and policy. Students spend a minimum of 40 hours in a social agency. Prerequisite: SOWK 133. (S)

**SOWK 372. Child Welfare I****Credit 3(3-0)**

This course is designed to offer students an opportunity to develop cognitive skills as they relate to the history and development of child welfare. Students will review needs of children and evaluate the extent to which parents/society are able to meet their needs. (F)

**SOWK 409. Disability and Employment****Credit 3(3-0)**

This course will focus on selected mental, physical, and social disabilities, and their implications for coping and employment. (DEMAND)

**SOWK 410. Social Functioning and Human Development****Credit 3(3-0)**

This course covers social growth during the life cycle, aspects of communication between people from different cultural backgrounds, and the implications of this growth and communi-



cation for service delivery to members of ethnic groups. Prerequisites: SOWK 133, SOWK 333, SOCI 100, SOCI 101, and SOCI 203. (F)

**SOWK 411. Professional Relationship Skills**

**Credit 3(3-0)**

This course is designed to provide the student with an understanding of the effective dimensions present in the helping process and an opportunity to learn and practice the skills. The course will be helpful to students entering social work, guidance and counseling, teaching, and nursing. It must be taken prior to field placement for B.S.W. students. Prerequisites: SOWK 133, SOWK 333, and SOWK 410. (S)

**SOWK 418. Practicum in the Community**

**Credit 5(0-16)**

This course includes the selection of a community problem, study and analysis of the problem followed by corrective activities, when possible. Prerequisite: Consent of the instructor. (DEMAND)

**SOWK 421. Reading for Honors in Social Welfare**

**Credit 3(3-0)**

Extensive library research in selected areas of social welfare is required. Prerequisites: Sophomore standing and "B" average. (DEMAND)

**SOWK 472. Child Welfare II**

**Credit 3(3-0)**

This course is an examination of philosophies and institutional systems that impact on child welfare. This course will examine influences of such issues as racism, sexism, women's liberation, and child advocacy. Major institutions (educational, court/legal, health care, economic, political) will be examined to identify and evaluate effects. (DEMAND)

**SOWK 503. Juvenile Delinquency**

**Credit 3(3-0)**

This course is the study of sociological and psychological explanation relative to the causes and rehabilitation of juvenile delinquents, probation and treatment of juveniles within the criminal justice system. (F)

**SOWK 507. Field Instruction I**

**Credit 5(5-0)**

The first of two practicums in generalist principles and concepts in a human service agency is provided in this course. Agency field instructors carry responsibility for facilitating students' learning. This is accomplished via personal supervision designed to help students integrate theory and practice to develop appropriate skill, knowledge, attitude and professional identity. Taken concurrently with SOWK 519. Students spend two days a week in an agency usually on Tuesdays and Thursdays. Students are also required to participate in a seminar course which meets twice a month usually on Wednesday mornings. This seminar is a part of the field instruction program and is designed to help students integrate their learning experiences. Professional liability insurance required before entering the Field. (F)

**SOWK 519. Social Work Methods I**

**Credit 3**

This is an introduction to the principles of social work practice and to the multiple roles assumed by the generalist social worker. Emphasis is placed on developing basic skills required for effective intervention with individuals, families and small groups. Course content provides for the analysis of interviewing, problem assessment and strategies through experiential exercises. Taken concurrently with SOWK 507. Prerequisites: SOWK 133, 410, 333 and 411. (F)

**SOWK 520. Field Instruction II**

**Credit 5**

This course is a continuation of knowledge and skill development under the guidance of the agency field director. Students are expected to gradually perform more independently often assuming full responsibility for various agency tasks assigned to them. Students spend two days a week in an agency usually on Tuesdays and Thursdays. They are also required to participate in a seminar course which meets twice a month, usually on Wednesday mornings. This seminar is a part of the field instruction program and is designed to help students integrate their learning experiences. Taken concurrently with SOCI 571. (S)

**SOWK 525. Independent Study****Credit 3(3-0)**

This course includes independent research in a delineated area of social welfare. Prerequisites: Only Sociology/Social Work Majors and consent of the instructor. (F;S;SS)

**SOWK 570. Senior Seminar****Credit 3(3-0)**

This course includes research and discussion of professional and field issues related to careers in sociology and social work. Prerequisite: Senior status. (S)

**SOWK 571. Social Work Methods II****Credit 3(3-0)**

This course is a continuation of skill development. Emphasis is on social work intervention in larger systems, (organizations, groups and communities.) Attention is given to further understanding the dynamic relationship between people and their environments; the conflicting issues in social work practice, and the impact of various settings on practice. Taken concurrently with SOWK 520. (S)

**SOWK 574. Institutional Services for Children****Credit 3(3-0)**

This course is a study of the primary resources available for children. Emphasis will be placed on the characteristics of children needing help and the adequacy/inadequacy of community programs. Attention is given to the cooperative nature of these programs as well as the auspices, standards and policies. (DEMAND)

**SOSW 625. Sociology/Social Work \*****Credit 5(0-5)**

This course is an internship to provide opportunities for students to enhance their employability by supervised experiences in selected agencies. (S)

**SOWK 674. Evaluation of Social Programs \*****Credit 3(3-0)**

The main focus is on evaluative research methodology; research designs, measurement of program effectiveness and cost effectiveness analysis. Includes case studies of needs assessment, program monitoring and impact measurement in human services. Prerequisites: Social Statistic (S203) and Research Methods (S403). (S)

*\* Full time social work students are required to register for SOWK 333, 410, 507, and 519 concurrently. Part time students with faculty approval may complete SOWK 333, and 410 prior to registering for 507 and 519.*

**INTRA-DEPARTMENTAL COURSES****SOCI 200. Introduction to Anthropology****Credit 3(3-0)**

This course includes an analysis and comparison of primitive cultures and further comparisons with modern cultures. (S)

**SOCI 300. Topics in Cultural Anthropology****Credit 3(3-0)**

Selected topics in language, culture, mythology, and religion designed to acquaint students with analyzing cultural patterning in this and other cultures will be studied. (F)

**SOWK 370. Aging in Society****Credit 3(3-0)**

Aging and its implication in social institutions are studied. Prerequisite: Junior standing. (DEMAND)

**SOWK 414. Black Experience****Credit 3(3-0)**

This is a topical seminar focusing on commonly shared experiences of American Blacks in selected social institutions. Prerequisite: Junior standing. (F;S;SS)

**SOSW 415. Medical Sociology****Credit 3(3-0)**

This course includes sociological analysis of medical services, the role of the sick professional organizations and quasi-professional groups; socializational structure of hospitals; sociodemographic and socioepidemiologic variables in relation to modern societies. Cultural and cross-cultural customs and traditions affecting attitudes toward health and the healing art will also be studied. (DEMAND)

- SOCI 416. Sociology of Mental Health** **Credit 3(3-0)**  
 This course is a sociocultural variation in the assessment of sociopathological and psychopathological aspects of mental disorder. A critical analysis of institutions of mental health care, consideration of the etiology of mental illness, typologies, and social policies relative to the phenomenon of mental health will also be included. Prerequisite: SOCI 100. (DEMAND)
- SOCI 420. Human Evolution in Ecological Perspective** **Credit 3(3-0)**  
 This course examines human cultural and biological evolution using an ecological perspective. (DEMAND)
- SOWK 515. Independent Study II** **Credit 3(3-0)**  
 Prerequisite: Six hours of statistics, and/or research. (DEMAND)
- SOSW 600. Seminar in Social Planning** **Credit 3(3-0)**  
 Personal and social values as related to social planning: "systems" theories program planning and evaluation are studied. Prerequisite: Senior or graduate standing. (DEMAND)
- SOSW 601. Seminar in Urban Studies** **Credit 3(3-0)**  
 An analysis of the nature and problems of cities, urban society and urban development will be included. (DEMAND)
- SOCI 603. Introduction to Folklore** **Credit 3(3-0)**  
 This course is a basic introduction to the study and appreciation of folklore. (DEMAND)
- SOSW 625. Sociology/Social Service Internship** **Credit 5(0-5)**  
 This course is an internship to provide opportunities for students to enhance their employability by supervised experiences in selected agencies. (F)
- SOCI 650. Independent Study in Anthropology** **Credit 3(3-0)**  
 This course enables the student to do readings and research in anthropology in cooperation with the instructor. (DEMAND)
- SOCI 651. Anthropological Experience** **Credit 3(3-0)**  
 This course provides an exploration of anthropological theories and research methods with an emphasis on qualitative research methods. (DEMAND)
- SOSW 669. Small Groups** **Credit 3(3-0)**  
 Elements and characteristics of small group behavior and process will be studied. Prerequisite: Senior or graduate standing; or permission of the instructor. (F;S)
- SOSW 670. Law and Society** **Credit 3(3-0)**  
 This course examines selected and representative forms of social justice and injustices; and barriers to and opportunities for legal redress, as related to contemporary issues. Prerequisite: Senior or graduate standing. (F;S;SS)
- SOWK 674. Evaluation of Social Programs\*** **Credit 3(3-0)**  
 Main focus is on evaluative research methodology; research designs, measurement of Program effectiveness and cost effectiveness analysis. Includes case studies of needs assessment, program monitoring and impact measurement in human services. Prerequisite: Social Statistics (S203) and Research Methods (S403). (S)
- SOCI 701. Seminar in Cultural Factors in Communication** **Credit 3(3-0)**  
 This course is designed both to sensitize the student to the importance of cultural factors in nonverbal and verbal communication and to equip the student with ways to record and analyze this behavior. (S)

*Note: Sociology 100, Sociology 101, Sociology 203, Sociology 204, Social Work 133, and SOSW 669 are the only courses scheduled to be taught each semester. Other courses are taught once per year and students must follow the curriculum sheets.*



## DIRECTORY OF FACULTY

- Fasihuddin Ahmed** ..... **Professor**  
 B.A., Forman Christian College; M.A., University of the Punjab; Ph.D., University of Chicago
- Robert Davis** ..... **Professor**  
 B.A., Southern University; M.A., Atlanta University; Ph.D., Washington State University; Post-Doctoral, University of Wisconsin, Madison
- Joyce Dickerson** ..... **Assistant Professor**  
 B.S., Tuskegee University; M.S.W., University of Alabama; Ph.D., University of Alabama
- Brenden Hargett** ..... **Adjunct**  
 B.A., M.S., North Carolina A&T State University
- David Johnson** ..... **Associate Professor**  
 B.A., Hamilton College, M.A., Ph.D., University of North Carolina at Chapel Hill
- Sarah Kirk** ..... **Professor and Chairperson**  
 B.A., St. Augustine's College; M.S.W., Atlanta University; M.P.H., Ph.D., University of Pittsburgh
- Wayne Moore** ..... **Assistant Professor**  
 B.S., East Carolina University; M.S.W., Ohio State University; Ph.D., University of South Carolina
- Ernest Morant** ..... **Assistant Professor**  
 B.A., Claflin College; M.S.W., New York University
- Ruthena Smith Marley** ..... **Adjunct**  
 B.S., North Carolina A&T State University; M.S.W., University of Connecticut
- John Steele** ..... **Assistant Professor**  
 B.A., Maryville College; M.S.S.W., Virginia Commonwealth University; D.S.W., Catholic University of America
- Mary Stephens** ..... **Adjunct**  
 B.S.W., Ferrum College; M.S.W., Virginia Commonwealth University
- Velma Tyrance** ..... **Assistant Professor**  
 B.S., Tuskegee Institute; M.S.W., Fordham University



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## **Department of Journalism and Mass Communication**

<http://www.ncat.edu/~jmc/>

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**Teresa J. Styles, Chairperson**

### **OBJECTIVES**

The objectives of the Department of Journalism and Mass Communication are as follows:

1. To assist students in developing their powers of critical thinking.
2. To assist students in developing in-depth competencies at least in one subject area.
3. To aid students in developing self-confidence and positive images.
4. To provide financial assistance to qualified students who otherwise could not attend college or enroll in the journalism and mass communication program or speech programs.
5. To develop and maintain accredited undergraduate and professional programs.
6. To encourage funded and non-funded faculty research.
7. To encourage scholarly publications and creative productions.
8. To determine and to satisfy the cultural and educational need of the community.

### **DEGREES OFFERED**

Journalism and Mass Communication – Bachelor of Science

Journalism and Mass Communication (Broadcast Production) – Bachelor of Science

Journalism and Mass Communication (Electronic Media & Journalism) – Bachelor of Science

Journalism and Mass Communication (Journalism and Mass Communication) – Bachelor of Science

Journalism and Mass Communication (Media Management) – Bachelor of Science

Journalism and Mass Communication (Print Journalism) – Bachelor of Science

Journalism and Mass Communication (Public Relations) – Bachelor of Science

Speech (Speech Communication) – Bachelor of Arts

Speech (Speech Pathology and Audiology) – Bachelor of Arts

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in Journalism and Mass Communication, and Speech are based upon the general admission requirements of the University. All students are expected to maintain a cumulative grade point average of at least 2.5 overall in the major

### **DEPARTMENTAL REQUIREMENTS**

*Journalism and Mass Communication:* All majors must meet certain prerequisites prior to beginning sophomore level communication courses required in their chosen concentration. They must demonstrate computer literacy skills as defined by the *College of Arts and Sciences*. A student must:

- a. Make a grade of “C” or better in the Grammar Proficiency Examination.
- b. Make a grade of “C” or better in the freshman composition courses.

*Journalism and Mass Communication:* A student admitted in the journalism and mass communication program and one who is eligible to be a candidate for the bachelor of arts degree must successfully complete a minimum of 124 hours and:

- a. Maintain a minimal 2.5 grade point average in the course of study.
- b. Have a combined Scholastic Aptitude Test (SAT) score of “800” in state and “920” out of state and achieve a cumulative grade point average of “B” or better.
- c. If criteria A and B are not met, a student may enter the University as an “Undecided,” when the cumulative GPA of 2.5 is completed, the student may be admitted as a pre-journalism and mass communication major.
- d. Successfully complete a required media workshop (COMM 591)
- e. Complete an internship with an approved media organization.
- f. Complete the following necessary practicum courses with a grade of “C” or better:
  1. Broadcast Production (1 Practicum + Media Workshop + Media Internship)
  2. Electronic Media and Journalism (1 Practicum + Media Workshop + Media Internship)
  3. Media Management (1 Practicum + Media Workshop + Media Internship)
  4. Journalism and Mass Communication (1 Practicum + Media Workshop + Media Internship)
  5. Print Journalism (1 Practicum + 1 Newspaper Practicum + Media Workshop + Media Internship)
  6. Public Relations (1 Practicum + 1 Newspaper Practicum + Media Workshop + Media Internship)
- g. The department will administer an exit examination to students pursuing a degree in Journalism and Mass Communication. These examinations place emphasis on the major principles and skills necessary to excel in each concentration: Broadcast Production, Electronic Media and Journalism, Journalism and Mass Communication, Media Management, Print Journalism, and Public Relations. Students must pass the examination before graduating from the university. The test will be given in the junior year and may be repeated until passed.
- h. Repeat any major course in which a grade of “D” or lower was achieved and receive a grade of “C” or better.

*Speech Communication:* A student admitted in the speech communication program and one who is eligible to be a candidate for the bachelor of arts degree must successfully complete a minimum of 124 hours and:

- a. Maintain a minimal 2.5 grade point average in the course of study.
- b. Have a combined Scholastic Aptitude Test (SAT) score of “800” in state and “920” out of state and achieve a cumulative grade point average of “B” or better.
- c. If criteria A and B are not met, a student may enter the University as an “Undecided,” when the cumulative GPA of 2.5 is completed, the student may be admitted as a pre-speech communication major.
- d. Transfer students must have earned an overall cumulative grade point average of 2.5 or higher to be accepted as a speech communication major.

- e. Prerequisites must be successfully completed with a grade of “B” or better before attempting major courses.
- f. Repeat any major course in which a grade of “D” or lower was achieved and receive a grade of “C” or better.

*Speech/Language Pathology and Audiology:* A student admitted in the speech language pathology and audiology program and one who is eligible to be a candidate for the bachelor of arts degree must successfully complete a minimum of 124 hours and:

- a. Have a combined Scholastic Aptitude Test (SAT) score of “800” in state and “920” out of state and achieve a cumulative grade point average of “B” or better.
- b. Achieve a cumulative grade point average of 2.7 if the student entered the University as an “Undecided,” to be accepted as a pre-speech language pathology and audiology major.
- c. Earn an overall cumulative grade point average of 2.7 or higher as a transfer student to be accepted as a Speech/Language Pathology and Audiology major.
- d. Maintain a minimal 3.0 grade point average in the course of study.
- e. Maintain a minimal 2.7 grade point average overall.
- f. Make a grade of “B” or better in all major core courses.
- g. Successfully complete all prerequisites with a grade of “B” or better before attempting major courses.
- h. Repeat any clinical practicum course in which a grade of “B” or lower was achieved and receive a grade of “B” or better.
- i. Be admitted to Clinical Phase with Privileges (i.e., admission to the clinical component of the program) prior to the junior year. This consists of a minimal 3.0 grade point average in all freshman and sophomore level major courses as well as the required application.

### **DEPARTMENTAL REQUIREMENTS**

*Journalism and Mass Communication* - The journalism and mass communication major must complete a minimum of 124 semester hours of University courses. Included in these 124 semester hours are forty-two semester hours of communication courses. A grade of “C” or better must be earned in these courses.

*Speech Communication* - Students pursuing a professional degree in speech communication must complete a minimum of 124 semester hours of University courses. Included in the 124 semester hours are 46 semester hours of speech communication courses. A grade of “B” or better must be earned in these courses.

*Speech/Language Pathology and Audiology* - Students pursuing a pre-professional degree in Speech/Language Pathology and Audiology must complete a minimum of 124 semester hours of university courses. Included in the 124 semester hours are 53 hours of Speech/Language Pathology and Audiology. A minimal 2.7 grade point average overall and a minimal 3.0 grade point average in the course of study is required.

### **CAREER OPPORTUNITIES**

A bachelor of science degree in journalism and mass communication will prepare students for careers in research and teaching, management, public relations, and corporate communication. Corporations, consulting firms, non-profit organizations, educational institutions, state, federal and local government agencies may provide job opportunities. Careers in the

journalism and mass communication industry continue to expand. With the development of new media and modern technology, various professional employment opportunities are favorable.

A bachelor of arts degree in speech communication will prepare students to pursue advanced degrees in communication, business, and law. The specific areas of emphasis include preparing students to become researchers, educators, advocates, and business and communication leaders.

A bachelor of arts degree in speech/language pathology and audiology will prepare students to pursue advanced degrees in the areas of speech pathology or audiology. The specific areas of emphasis include preparing students to become researchers, educators, clinicians and community leaders that prevent, assess, and treat speech, language, and hearing disorders in a culturally diverse population. Students must receive the master's degree in speech/language pathology and audiology in order to gain favorable employment in clinics, schools, hospitals, and state and federal government agencies. Teaching positions in colleges and universities will be competitive.

**REQUIRED MAJOR COURSES FOR  
JOURNALISM AND MASS COMMUNICATION**

**(Broadcast Production)**

COMM 220	COMM 598	COMM 419
COMM 240	COMM 231	COMM 445
COMM 245	COMM 405	COMM 507
COMM 493	COMM 406	COMM 508
COMM 591		

**CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION**

**(Broadcast Production)**

**FRESHMAN YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH101	3	MATH 102	3
HIST 100	3	HIST Elective	3
BIOL 100	4	ART 224, MUSI 216, 220 or	
PHED Elective	1	ENGL 333	3
ENGL 102	<u>2</u>	PHED Elective	
	16	SPCH 116	<u>1</u>
			14

**SOPHOMORE YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA <sup>2</sup>	3	FOLA <sup>2</sup>	3
SPCH 250	3	PHYS 110, 111 <sup>1</sup>	3-4
ENGL 200	3	COMM 445	3
COMM 220	3	COMM 240	3
COMM 231 <sup>3</sup>	1	COMM Elective	3
COMM 24	<u>3</u>	Concentrated Elective <sup>4</sup>	<u>3</u>
	16		18-19



## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Concentrated Elective <sup>4</sup>	3	COMM 508	3
COMM 406	3	COMM 419*	3
COMM 405	3	GEOG 210	3
SPCH 309	3	SOCI 302	3
PSYC 320	3	Concentrated Elective <sup>4</sup>	2
POLI 210	<u>3</u>	COMM 591 <sup>5</sup>	<u>2</u>
	18		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 507	3	SPCH 552	3
COMM Elective	3	Concentrated Elective <sup>4</sup>	7
COMM 598	3	PHIL 260, 261, 262	<u>3</u>
COMM 493	3		13
COMM 418*	<u>3</u>		
	15		

Total Credit Hours: 126-127

<sup>1</sup> Natural Science Elective: If taking EASC 3-credits, you will need an additional 1-credit for graduation. If taking CHEM 100/110 4-credits, you will not need an additional hour.

<sup>2</sup> French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) and Portuguese (6 hrs).

<sup>3</sup> Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

<sup>4</sup> Concentrated Electives must be discussed with advisor.

<sup>5</sup> Must take COMM 591 – Media Workshop the semester prior to enrolling in COMM 598.

\* Broadcast Production Majors must take 1 of the following editing courses COMM 419 or 418.

Communication Electives: 302, 403, 418, 500, 600, 601, 602, 603, 604, 605, 606, 607.

## REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION

### (Electronic Media and Journalism)

COMM 220	COMM 598	COMM 425
COMM 240	COMM 231	COMM 445
COMM 245	COMM 255	COMM 435
COMM 493	COMM 406	COMM 475
COMM 591		

## CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION

### (Electronic Media and Journalism)

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST 100	3	HIST Elective	3
BIOL 100	4	Natural Science Elective <sup>1</sup>	3-4
PHED Elective	1	PHED Elective	1
ENGL 102	<u>2</u>	SPCH 116	<u>1</u>
	16		14-15

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 220	3	COMM Elective	3
ENGL 200	3	COMM 445	3
COMM 255	2	GEOG 210	3
FOLA <sup>2</sup>	3	FOLA <sup>2</sup>	3
COMM 245	3	COMM 240	3
COMM Elective	<u>1</u>	Concentrated Elective <sup>3</sup>	<u>3</u>
	15		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 425	3	COMM 435	3
POLI 210	3	ART 224, MUSI 216, 220, or	
Concentrated Elective <sup>3</sup>	3	ENGL 333	3
COMM 406	3	Concentrated Elective <sup>3</sup>	3
COMM 493	3	COMM 231 <sup>4</sup>	1
SOCI 302	<u>3</u>	SPCH 250	3
	18	PHIL 260, 261, 162	3
		COMM 591 <sup>5</sup>	<u>2</u>
			18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM Elective	3	SPCH 309	3
Concentrated Elective <sup>3</sup>	6	Concentrated Elective <sup>3</sup>	3
COMM 598	3	PSYC 320	3
COMM 475	<u>3</u>	SPCH 552	<u>3</u>
	15		12

Total Credit Hours 126-127

<sup>1</sup>Natural Science Elective: If taking EASC 3-credits, you will need an additional 1-credit for graduation. If taking CHEM 100/110 4-credits, you will not need an additional hour.

<sup>2</sup>French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) and Portuguese (6 hrs).

<sup>3</sup>Concentrated Electives must be discussed with advisor.

<sup>4</sup>Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

<sup>5</sup>Must take COMM 591 – Media Workshop the semester prior to enrolling in COMM 598.

Communication Electives: 302, 403, 418, 500, 600, 601, 602, 603, 604, 605, 606, 607.

## REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION

### (Journalism and Mass Communication)

COMM 220	COMM 598	COMM 424
COMM 240	COMM 231	COMM 445
COMM 245	COMM 405	COMM 476
COMM 493	COMM 406	COMM 522
COMM 591		

# CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION

## (Journalism and Mass Communication)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH101	3	MATH 102	3
HIST 100	3	HIST Elective	3
BIOL 100	4	ART 224, MUSI 216, 220 or	
PHED Elective	1	ENGL 333	3
ENGL 102	<u>2</u>	PHED Elective	1
	16	SPCH 116	<u>1</u>
			14

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA <sup>2</sup>	3	FOLA <sup>2</sup>	3
SPCH 250	3	PHYS 110, 111 <sup>1</sup>	3-4
ENGL 200	3	COMM 445	3
COMM 220	3	COMM 240	3
COMM 231 <sup>3</sup>	1	COMM Elective	3
COMM 245	<u>3</u>	Concentrated Elective <sup>4</sup>	<u>3</u>
	16		18-19

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Concentrated Elective <sup>4</sup>	3	COMM 424	3
COMM 406	3	COMM 419*	3
COMM 405	3	GEOG 210	3
SPCH 309	3	SOCI 302	3
PSYC 320	3	Concentrated Elective <sup>4</sup>	5
POLI 210	<u>3</u>	COMM 591 <sup>5</sup>	<u>2</u>
	18		19

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 476	3	SPCH 552	3
COMM Elective	3	Concentrated Elective	4
COMM 598	3	PHIL 260, 261, 262	<u>3</u>
COMM 493	3		10
COMM 418*	<u>3</u>		
	15		

Total Credit Hours: 126-127

<sup>1</sup> Natural Science Elective: If taking EASC 3-credits, you will need an additional 1-credit for graduation. If taking CHEM 100/110 4-credits, you will not need an additional hour.

<sup>2</sup> French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) and Portuguese (6 hrs).

<sup>3</sup> Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

<sup>4</sup> Concentrated Electives must be discussed with advisor.

<sup>5</sup> Must take COMM 591 – Media Workshop the semester prior to enrolling in COMM 598.

\* Broadcast Production Majors must take 1 of the following editing courses COMM 419 or 418.

Communication Electives: 302, 403, 418, 500, 600, 601, 602, 603, 604, 605, 606, 607.

## REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION

### (Media Management)

COMM 220	COMM 598	COMM 499
COMM 240	COMM 368	COMM 522
COMM 245	COMM 405	BUAD 220
COMM 493	COMM 406	ECON 300
COMM 591		

## CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION

### (Media Management)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH101	3	MATH 102	3
HIST 100	3	HIST Elective	3
BIOL 100	4	Natural Science Elective <sup>1</sup>	3-4
PHED Elective	1	PHED Elective	1
ENGL 102	<u>2</u>	SPCH 116	<u>1</u>
	16		14-15

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA <sup>2</sup>	3	FOLA <sup>2</sup>	3
ENGL 200	3	GEOG 210	3
COMM 220	3	BUAD 220	3
SPCH 250	3	Concentrated Elective <sup>4</sup>	3
COMM 245	<u>3</u>	COMM Elective	3
	15	SOCI 302	<u>3</u>
			18

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 240	3	PSYC 320	3
POLI 210	3	SPCH 309	3
ECON 200	3	COMM 366	3
PHIL 260, 261, 262	3	Concentrated Elective <sup>4</sup>	5
COMM 493	3	COMM 405	3
COMM 406	<u>3</u>	COMM 591 <sup>5</sup>	<u>2</u>
	18		19



## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 598	3	COMM 499	3
COMM Elective	3	Concentrated Elective <sup>4</sup>	6
SPCH 552	3	COMM 368	1
Concentrated Elective <sup>4</sup>	4	ART 224, MUSI 216, 220 or	
	13	ENGL 333	<u>3</u>
			13

Total Credit Hours: 126-127

<sup>1</sup>Natural Science Elective: If taking EASC 3-credits, you will need an additional 1-credit for graduation. If taking CHEM 100/110 4-credits, you will not need an additional hour.

<sup>2</sup>French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) and Portuguese (6 hrs).

<sup>4</sup>Concentrated Elective must be discussed with advisor.

<sup>5</sup>Must take COMM 591 – Media Workshop the semester prior to enrolling in COMM 598.

Communication Electives: 302, 403, 418, 500, 600, 601, 602, 603, 604, 605, 606, 607.

## REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION

### (Print Journalism)

COMM 220	COMM 598	COMM 440
COMM 240	COMM 231	COMM 502
COMM 245	COMM 300	COMM 530
COMM 493	COMM 424	COMM 540
COMM 591		

## CURRICULUM GUIDE FOR

### JOURNALISM AND MASS COMMUNICATION

#### (Print Journalism)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH101	3	MATH 102	3
HIST 100	3	HIST Elective	3
BIOL 100	4	Natural Science Electives <sup>1</sup>	3-4
ENGL 102	2	SPCH 116	1
PHED Elective	<u>1</u>	PHED Elective	<u>1</u>
	16		14-15

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA <sup>2</sup>	3	FOLA <sup>2</sup>	3
ENGL 200	3	GEOG 210	3
COMM 220	3	COMM 530	3
SPCH 250	3	Concentrated Elective <sup>4</sup>	3
COMM 245	3	COMM Elective	3
COMM 231 <sup>3</sup>	<u>1</u>	SOCI 302	<u>3</u>
	16		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 240	3	PSYC 320	3
POLI 210	3	SPCH 309	3
COMM 300	3	COMM 540	3
PHIL 260, 261, 262	3	Concentrated Elective <sup>4</sup>	6
COMM 493	3	COMM 597	1
COMM 424	<u>3</u>	COMM 591 <sup>5</sup>	<u>2</u>
	18		18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 598	3	COMM 440	3
COMM Elective	3	Concentrated Elective <sup>4</sup>	6
SPCH 552	3	COMM 502	2
Concentrated Elective <sup>4</sup>	<u>4</u>	ART 224 or MUSI 216, 220 or	<u>3</u>
	13	ENGL 333	14

Total Credit Hours: 127-128

<sup>1</sup>Natural Science Elective: If taking EASC 3-credits, you will need an additional 1-credit for graduation. If taking CHEM 100/110 4-credits, you will not need an additional hour.

<sup>2</sup>French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) and Portuguese (6 hrs).

<sup>3</sup>Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

<sup>4</sup>Concentrated Electives must be discussed with advisor.

<sup>5</sup>Must take COMM 591 – Media Workshop the semester prior to enrolling in COMM 598.

Communication Electives: 302, 403, 418, 500, 600, 601, 602, 603, 604, 605, 606, 607.

## REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION

### (Public Relations)

COMM 220	COMM 598	COMM 424
COMM 240	COMM 230	COMM 476
COMM 245	COMM 231	COMM 486
COMM 493	COMM 390	COMM 596
COMM 591		

## CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION

### (Public Relations)

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH101	3	MATH 102	3
HIST 100	3	HIST Elective	3
BIOL 100	4	Natural Science Electives <sup>1</sup>	3-4
ENGL 102	2	PHED	1
PHED	<u>1</u>	SPCH 116	<u>1</u>
	16		14-15

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA <sup>2</sup>	3	FOLA <sup>2</sup>	3
ENGL 200	3	GEOG 210	3
COMM 220	3	Concentrated Elective <sup>4</sup>	3
SPCH 250	3	COMM Elective	3
COMM 245	3	COMM 230	3
COMM 231 <sup>3</sup>	<u>1</u>	SOCI 302	<u>3</u>
	16		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 240	3	PSYC 320	3
POLI 210	3	SPCH 309	3
COMM 476	3	COMM 486	3
PHIL 260, 261, or 262	3	Concentrated Elective <sup>4</sup>	6
COMM 493	3	COMM 431 <sup>3</sup>	1
COMM 424	<u>3</u>	COMM 591 <sup>5</sup>	<u>2</u>
	18		18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMM 390	3	Concentrated Elective <sup>4</sup>	6
COMM 598	3	COMM 596	3
COMM Elective	3	ART 224, MUSI 216, 220 or	
SPCH 552	3	ENGL 333	<u>3</u>
Concentrated Elective <sup>4</sup>	<u>3</u>		12
	15		

Total Credit Hours: 127-128

<sup>1</sup> *Natural Science Elective: If taking EASC 3-credits, you will need an additional 1-credit for graduation. If taking CHEM 100/110 4-credits, you will not need an additional hour.*

<sup>2</sup> *French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) and Portuguese (6 hrs).*

<sup>3</sup> *Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.*

<sup>4</sup> *Concentrated Electives must be discussed with advisor.*

<sup>5</sup> *Must take COMM 591 – Media Workshop the semester prior to enrolling in COMM 598.*

*Communication Electives: 302, 403, 418, 500, 600, 601, 602, 603, 604, 605, 606, 607.*

## REQUIRED MAJOR COURSES FOR SPEECH

### (Speech Communication)

COMM 220	SPCH 250	SPCH 450
COMM 431	SPCH 253	SPCH 539
COMM 440	SPCH 309	SPCH 551
COMM 476	SPCH 361	SPCH 561
ENGL 102	SPCH 421	SPCH 610
SPCH 116	SPCH 422	SPCH 680
SPCH 118		

# CURRICULUM GUIDE FOR SPEECH

## (Speech Communication)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
CHEM 100/110	4	BIOL 100	4
EASC 201**	3	MATH 102	3
MATH 101	3	HIST 101	3
SPCH 116	1	ENGL 102	2
HIST 100	3	PHED	<u>1</u>
SPCH 250	<u>3</u>		16
	16-17		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ENGL 201	3
PSYC 320	3	SPCH 253	2
COMM 220	3	FOLA <sup>1</sup>	3
FOLA <sup>1</sup>	3	Concentrated Elective	3
PHED	1	Humanities Elective	3
POLI 200	<u>3</u>	SPCH 118	1
	16	PHED	<u>1</u>
			16

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPCH 309	3	COMM 440	3
SPCH 421	3	ENGL 331	3
Concentrated Electives	4	COMM 476	3
SPCH 452	3	Concentrated Electives	6
SPCH 361	<u>3</u>	COMM 431	<u>1</u>
	16		16

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPCH 552	3	SPCH 680	3
SPCH 539	3	SPCH 422	3
SPCH 610	3	Concentrated Electives	6
SPCH 680	3	SPCH 561	<u>3</u>
Concentrated Elective	3		15
COMM 431	<u>1</u>		
	16		

Total Hours: 124

<sup>1</sup> Must take 6 hours within a single foreign language area.

\* Must take Media Workshop the semester prior to enrolling.

\*\*If taking EASC 3-credits, you will need an additional 1-credit for graduation. If taking CHEM 100/110 you will not need an additional hour.

See your advisor for concentrated electives.



## REQUIRED MAJOR COURSES FOR SPEECH

### (Speech Pathology and Audiology)

ENGL 300	SPCH 309	SPCH 469
MUSI 216	SPCH 319	SPCH 479
SPCH 116	SPCH 432	SPCH 509
SPCH 250	SPCH 450	SPCH 519
SPCH 259	SPCH 459	SPCH 529
SPCH 269		

## CURRICULUM GUIDE FOR SPEECH

### (Speech Pathology and Audiology)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST 100	3	HIST 101	3
BIOL 100	4	BIOL 361	4
PHED	<u>2</u>	ART 224	<u>2</u>
	15		15

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA <sup>1</sup>	3	FOLA <sup>1</sup>	3
ENGL 200 or 202	3	ENGL 201 or 202	3
PSYC 320	3	Concentrated Elective	3
SPCH 250	3	ENGL 300	3
SOCI 100	3	SPCH 116	1
SPCH 259	<u>3</u>	MUSI 216	<u>3</u>
	18		16

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Concentrated Elective	3	SPCH 432	3
SPCH 309	3	SPCH 459	3
SPCH 269	3	Major Electives	6
SPCH 479	3	Concentrated Elective	<u>3</u>
Concentrated Elective	<u>3</u>		15
	15		

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SPCH 319	3	SPCH 469	3
SPCH 509	3	SPCH 529	3
HEFS 310	3	Concentrated Electives	6
SPCH 519	3	SOCI 302 or PSYC 322	<u>3</u>
SPCH 452	<u>3</u>		15
	15		

Total Hours: 124

<sup>1</sup> Must take 6 hours within a single foreign language area.

See your advisor for concentrated electives.

## COURSE DESCRIPTIONS IN SPEECH

### **SPCH 116. Voice and Diction Lab I**

**Credit 1(0-2)**

This is a course in speech improvement with emphasis on articulation, pronunciation and projection. (F,S)

### **SPCH 117. Voice and Diction Lab II**

**Credit 1(0-2)**

This course is a continuation of Speech 116. Instruction and practice to improve articulation, pronunciation and voice quality. (DEMAND)

### **SPCH 118. Development of General American Speech Patterns**

**Credit 1(0-2)**

Topics to be studied include the development of general American speech patterns, the role and value of dialects, and the social functions of language. (DEMAND)

### **SPCH 119. Speech Improvement for Foreign Students**

**Credit 1(0-2)**

This course is an instruction and practice in the development of speech intelligibility, for foreign students who wish to perfect their spoken American English. (DEMAND)

### **SPCH 250. Speech Fundamentals**

**Credit 3(3-0)**

This course is an introduction to the rhetorical, psychological, physiological, linguistic, and communication bases of oral disclosure. Preparation and practice in intrapersonal, interpersonal and public communication, and critical listening will be included. SPCH 116 is a recommended prerequisite for students with nonstandard speech and voice patterns. (F,S,SS)

### **SPCH 259. Introduction to Speech Pathology**

**Credit 3(3-0)**

This course is a study of the causes, symptoms, and treatment of minor speech disorders, basic theories underlying speech correction. It is aimed at preparing the classroom teacher to identify common speech disorders and to make referrals to speech therapists. (F,S,SS)

### **SPCH 269. Introduction to Audiology**

**Credit 3(3-0)**

This course is a study of hearing, both normal and abnormal, with information on the nature, causes, identification and rehabilitation treatment of persons with hearing disorders. Prerequisite: Junior or Senior standing. (F,S)

### **SPCH 309. Phonetics**

**Credit 3(3-0)**

This course is the study of broad transcription: The International Phonetic Alphabet; standards of pronunciation; dialectal variations in America; physiological and acoustical bases of speech sounds. Prerequisite: SPCH 250 or consent of the instructor. (F,SS)

### **SPCH 319. Development of Speech and Language in Children**

**Credit 3(3-0)**

This course is designed to provide the student with theories of acquisition, growth, and development of speech language skills in children. Prerequisite: SPCH 259. (S)

### **SPCH 335. Rhetoric of American Thought (Formerly SPCH 561)**

**Credit 3(3-0)**

This course is an introduction to the study of rhetorical discourse. It is a critical study of selected American orators – their speeches on controversial social and political issues from 1830 to present. The main concentration is on audience, delivery and historical context. Prerequisite: SPCH 102 and 250. (F,S,SS)

### **SPCH 361. Argumentation and Debate**

**Credit 3(3-0)**

This course includes study and practice in analysis, gathering of material, briefing, ordering of arguments and evidence, refutation, and delivery. Prerequisite: SPCH 250. (F)

### **SPCH 422. Oral Reading and Interpretation**

**Credit 3(3-0)**

A study of the analysis and the oral interpretation of the forms of classical and modern literature, e.g. poetry, narrative prose, the essay, and dramatic literature will be included. Oral practice in individual and group projects will be required. Prerequisite: SPCH 250. (F,S,SS)

**SPCH 432. Voice and Articulation Disorders (Formerly SPCH 329) Credit 3(3-0)**

Consideration of theories, principles, and procedures for appraisal and treatment of voice and articulatory deviations will be included. Prerequisite: SPCH 259. (F,S,SS)

**SPCH 452. Public Speaking (Formerly SPCH 450) Credit 3(3-0)**

This course is a study of the methods by which public speeches are made clear, interesting and forceful. Practice in writing and delivering speeches according to the audience is included. Prerequisite: SPCH 250. (F,S,SS)

**SPCH 459. Principles of Audiometry (Formerly SPCH 359) Credit 3(3-0)**

This course is a study of the techniques of hearing assessment in clinical, educational, industrial, and medical settings and interpretation of test results. Prerequisites: Successful completion of SPCH 269 and 479. (F,S,SS)

**SPCH 469. Aural Rehabilitation (Formerly SPCH 369) Credit 3(3-0)**

This course is a study of the major theories of speech reading and procedures for teaching visual communication skills to hearing impaired persons. Prerequisites: SPCH 269, 309 and 459. (F,S,SS)

**SPCH 479. Anatomy and Physiology of the Ear and Vocal Mechanism (Formerly SPCH 279) Credit 3(3-0)**

This course is a study of the organs and systems of the body related to the processes of hearing and speech. Prerequisite: Junior or senior standing, or consent of the instructor. (F,S,SS)

**SPCH 461. Group Discussion Credit 3(3-0)**

This course is a study of the forms of discussion and the principles and methods underlying them. Practice in leading and participating in discussions is required. Prerequisite: SPCH 250. (F)

**SPCH 509. Organic Disorders (Formerly SPCH 409) Credit 3(3-0)**

A study of theories, principles, and procedures for evaluation and treatment of disordered communication behaviors that accompany organically based anomalies. Prerequisites: SPCH 259 and 432. (F,S,SS)

**SPCH 519. Introduction to Stuttering (Formerly SPCH 419) Credit 3(3-0)**

A study of theories, principles and procedures for the appraisal and treatment of persons with dysfluencies of speech. Prerequisite: SPCH 259. (F,S,SS)

**SPCH 529. Clinical Practicum I (Formerly SPCH 429) Credit 3(3-0)**

This course includes supervised clinical experiences in the management of speech language and/or hearing disorders; includes interviews, diagnosing and formulating and carrying out a plan of therapy. Prerequisites: Senior standing, successful completion of 12 hours of speech pathology and audiology courses, and consent of clinical supervisor. (F,S,SS)

**SPCH 539. Methods of Teaching Speech and Theatre Credit 3(3-0)**

This course is a study of the aims, objectives, problems and difficulties experienced in teaching speech in the modern school. Special attention is given to the organization of speech and theatre curriculums, to planning courses of study, its presentation, and to the selection of materials and equipment required of all speech and theatre education majors. Prerequisites: 27 hours of speech and 15 hours of education and psychology. (DEMAND)

**SPCH 552. Persuasive Communication (Formerly SPCH 551) Credit 3(3-0)**

This course is a study of the theory and practice of persuasive speaking in the democratic society, including formal and informal persuasive speaking, types of proof, and the ethics of persuasion. Practice in the preparation and presentation of persuasive messages is required. Prerequisite: SPCH 250. (F,S,SS)

**SPCH 610. Speech for Teachers****Credit 2(2-0)**

This course includes the study and application of the fundamental principles of oral communication related to teaching and learning; speech activities and interpersonal relations identified with teaching and learning and the teaching profession; and exercises for self-improvement in the various speech processes. (DEMAND)

**SPCH 680. Independent Study in Speech****Credit 3(3-0)**

This course is an independent study in the area of speech communication and speech pathology/audiology to be determined by the student in consultation with the instructor. Prerequisites: Permission of chairperson and instructor, and junior and senior standing.

**COURSE DESCRIPTIONS IN JOURNALISM AND MASS COMMUNICATION****COMM 202. Introduction to Mass Media****Credit 3(3-0)**

This course is a survey of mass media, including newspapers, magazines, radio and television. (DEMAND)

**COMM 220. News Writing (Formerly ENGL 225)****Credit 3(2-2)**

The study of the elements of news stories and the writing of leads. The organization and format for writing various types of copy for newspapers, radio and television is included. Prerequisites: Grammar Proficiency Exam and SPCH 116. (F,S,SS)

**COMM 230. Public Relations Writing (Formerly ENGL 231)****Credit 3(3-0)**

This course involves instruction and practice in writing for the news, governmental and legislative agencies, press releases and all other writing styles required of public relation specialists. Prerequisite: Grammar Proficiency Exam, 220. (F,S,SS)

**COMM 231. Practicum II****Credit 1(0-2)**

Student serves on staff of campus media organizations such as the newspaper, television studio, radio station, or university public relations. Prerequisite: Sophomore standing. (F,S,SS)

**COMM 240. Media History****Credit 3(3-0)**

This course examines the relationship between the media and United States history. It recognizes the significance of alternative media such as minority and non-traditional media and analyses the relationship between media and government to explore and understand the roles they play in history. Prerequisite: ENGL 100. (F, S,SS, DEMAND)

**COMM 245. Technological Information Sources****Credit 3(3-0)**

This course involves the instruction and practice in utilizing libraries, databases, government records and the Internet for the purpose of obtaining information from electronic sources to be used by all professional communicators. (F,S,SS)

**COMM 255. On-Air Delivery****Credit 2(2-0)**

This course is designed to emphasize performances skills essential to successful communication through the electronic media. The course will focus on the analysis and delivery of copy, voice quality, guidelines for pronunciation, and techniques for specialized announcing. Prerequisite: SPCH 116. (F,S,SS)

**COMM 300. Photojournalism****Credit 3(3-0)**

This course involves instruction and practice in the photography of university events with emphasis on journalism techniques. The digital camera will be used for the development of photographs necessary for the *A&T Register* and other campus publications. (F,S,SS)



**COMM 302. Minorities in Mass Media (Formerly SPCH 260) Credit 3(3-0)**

This course presents an overview of past and present minority contributions in the areas of film, radio, television, newspapers and magazines. This course presents an examination of minority roles in contemporary media with emphasis on career opportunities for minorities. (*Open to university*) (S)

**COMM 366. Leadership Problems and Media Management Credit 3(3-0)**

This course involves the analysis of issues facing media executives and their employees. Problems and solutions will be emphasized that reflect the concerns of management in print, electronic media, and public relations. Prerequisite: Senior standing. (F,S,SS)

**COMM 368. Practical Writing Credit 1(1-1)**

This course involves the instruction and practice in communication skills for students of media management who will be involved in writing policy and procedures for media organizations. Prerequisite: Senior standing. (F,S,SS)

**COMM 390. Public Relations Case Studies Credit 3(3-0)**

This course focuses on case studies and the success and failure of public relations practices. Prerequisite: Senior standing. (F,S,SS)

**COMM 403. Black Press in the United States Credit 3(3-0)**

This course examines, within a chronological framework, the development of the African American press in the United States since the early 1800s. Focus is on significant personalities and issues during major movements in African American history. Prerequisites: COMM 220 and 240. (F,S,SS)

**COMM 405. Radio Production I (Formerly COMM 308 & SPCH 255) Credit 3(2-2)**

Practical experience in radio broadcasting techniques and conventional studio practices; projects in radio announcing. Programs are planned and executed by the students. Prerequisites: Grammar Proficiency Exam, 220, 445 and SPCH 116. (F,S,SS)

**COMM 406. Television Production I (Formerly COMM 307, 404 & SPCH 256) Credit 3(2-2)**

This course involves methods and techniques in television production, announcing, program design, lighting, audio, camera, and electronic techniques are studied. Laboratory practice is also required. Prerequisites: SPCH 116 and Grammar Proficiency Exam, 220, 445. (F,S,SS)

**COMM 417. Advanced Video Production Credit 3(3-0)**

Video production techniques are developed through the creation of individual video programs. Prerequisite: COMM 419. (DEMAND)

**COMM 418. Digital Audio Production Credit 3(3-0)**

Advanced editing and production techniques and practices utilizing digital production equipment. Prerequisite: COMM 508. (DEMAND)

**COMM 419. Video Editing (Formerly COMM 317) Credit 3(3-0)**

This course involves digital audio production; advanced editing and production techniques, and practices utilizing digital production equipment for the development of creative productions of studio tapes for narrations, public service and commercial announcements and programs.. Prerequisite: Grammar Proficiency Exam, 220, 507. (F, S, SS)

**COMM 424. News Editing and Layout (Formerly COMM 320 & ENGL 230) Credit 3(3-0)**

This is a continuation of COMM 230, with the primary emphasis on basic copyediting. Extensive practical work in copy editing, headline writing, principles of typography and makeup are studied. Weekly outside news and feature assignments constitute the laboratory period. Prerequisites: Grammar Proficiency Exam, 220, 230, 530 Majors Only. (F,S,SS)

- COMM 425. Broadcast News Writing (Formerly COMM 325)** **Credit 3(3-0)**  
 Analysis of broadcast journalism, reporting, writing and editing of news for radio and television in oral and visual modes. Prerequisite: Grammar Proficiency Exam, 220. (F,S,SS)
- COMM 431. Practicum II** **Credit 1(0-2)**  
 Student serves on staff of campus media organizations such as newspaper, television studio, radio station, or university public relations. Prerequisite: Junior and senior standing. (F,S,SS)
- COMM 435. Advanced Reporting and Producing (Formerly COMM 335)** **Credit 3(3-0)**  
 This course will focus on specialized beat reporting and producing news cast for converged media. The continuation of broadcast news concepts with more advanced fieldwork will be supervised. Students will have assigned beats to develop local packages and newscasts for broadcast on the TV Studio channel. Students will do their own videography and editing. Deadline conditions are enforced. Prerequisites: Grammar Proficiency Exam, 220, 425, and SPCH 116. (F,S,SS)
- COMM 437. Field Production** **Credit 3(3-0)**  
 Practical application of out-of-studio production techniques and theories for audio and video programs will be emphasized. Prerequisite: COMM 419. (DEMAND)
- COMM 440. Editorial Writing (Formerly ENGL 333)** **Credit 3(3.0)**  
 A study of interpretation and comment in the writing of editorials. Intensive practice in writing editorials for newspapers and magazines. Prerequisite: COMM 424. (DEMAND)
- COMM 445. Script Writing (Formerly COMM 345)** **Credit 3(3-0)**  
 This course will focus on writing scripts for radio and television and the audiovisual division of a corporation or educational institution. Students will research and write treatment for corporate video, writing and producing promotional copy, commercials, public service announcements, and talk shows. Prerequisites: SPCH 116 and Grammar Proficiency Exam, 220. (F,S,SS)
- COMM 475. Special Projects** **Credit 3(2-2)**  
 The students will learn formats used in television news magazines and documentary productions, with emphasis on developing a major research effort into a half-hour or hour program or a multi-part series. Prerequisite: COMM 425. (F,S,SS)
- COMM 476. Introduction to Public Relations Principles**  
**(Formerly COMM 376)** **Credit 3(3-0)**  
 This course will emphasize internal and external public relations concepts for corporate, government and non-profit organizations. Prerequisites: Grammar Proficiency Exam, 220, 230, 445. (F,S,SS)
- COMM 486. Research, Communication, Planning and Strategy**  
**(Formerly COMM 386)** **Credit 3(3-0)**  
 This course involves instruction in research, planning and evaluation skills of public relations practitioners in internal and external business environments. Prerequisite: Grammar Proficiency Exam, 220, 230, 424, 476. (F,S,SS)
- COMM 493. Communications Law and Ethics (Formerly COMM 392)** **Credit 3(3-0)**  
 Survey of legal and extra-legal limitations on press freedom. Study of legal issues including libel, free press-trial, contempt of court, copyright, access law. Prerequisite: Junior or senior Standing. (F,S,SS)
- COMM 499. Seminar: Case Studies in International Media Management** **Credit 3(3-0)**  
 This course involves readings, discussions and analysis of case studies in international media management strategies in an effort to highlight the issues confronting media managers in international media organizations. Prerequisite: Senior standing. (F,S,SS)

**COMM 500. Public Relations Seminar****Credit 3(3-0)**

A special topic course on a selected aspect of public relations as it relates to advertising and marketing research and other topics such as electronic communication. Topics vary from semester to semester. Prerequisite: Senior standing. (F,S,SS)

**COMM 502. Current Issues in Mass Communication****(Formerly COMM 402 & ENGL 462)****Credit 2(2-0)**

A study of the rights, responsibilities and changing characteristics of the mass media and the problems therein. Extensive use of the debate, mass communications practitioners and guest speakers will be required. Prerequisites: Grammar Proficiency Exam, 220, 424, 476, 492, 486, junior or senior standing. (F,S,SS)

**COMM 507. Electronic Field and Studio Production (Formerly COMM 407)****Credit 3(2-2)**

This course involves project based, hands on advance video productions for in-studio and field applications. Emphasis will be placed on producing professional quality programs for television. Prerequisite: Grammar Proficiency Exam, 220, 406, 419. (F,S,SS)

**COMM 508. Advanced Radio Production (Formerly COMM 408)****Credit 3(3-0)**

This course involves production technology including recording, editing production techniques and concepts. Prerequisites: Grammar Proficiency Exam, 220, 405, 445, and SPCH 116. (F,S,SS)

**COMM 522. Media Management and Legal Issues (Formerly COMM 422)****Credit 3(3-0)**

An examination of the principles and policies of media management that encompasses electronic and print media. Prerequisites: Grammar Proficiency Exam, 220, 406, and SPCH 116. (F,S,SS)

**COMM 530. Advanced Reporting and Writing (Formerly COMM 330)****Credit 3(3-0)**

This course involves advanced training in newsgathering techniques with emphasis in investigative reporting and technical writing. Students will have assigned beats to cover for publication in the *A&T Register* and other university publications. Prerequisites: Grammar Proficiency Exam and COMM 220. (F,S,SS)

**COMM 540. Feature Writing (Formerly COMM 340 & English 330)****Credit 3(3-0)**

This course is an intensive practicum of feature writing involving background research for an in-depth report on various topics. Prerequisites: Grammar Proficiency Exam, 220, 230. (F,S,SS)

**COMM 591. Media Workshop****Credit 2(2-0)**

This is an intensive study into professional practices, skills, etiquette and attitudes of the media industry in preparation for an off-campus field learning experience. Students will develop the necessary tools for a successful interview such as cover letter, resume, portfolio, and resume tape as they pertain to their specialized areas of study. Media professionals will conduct a mock interview to assess a student's skills and provide feedback in a written evaluation. \*Note Prerequisites: This course must be taken the semester "prior" to enrolling in COMM 598 - Media Internship, Junior or Senior Standing, There is a different prerequisite for each concentration: Electronic Media and Journalism - 591.01: Grammar Proficiency Exam, COMM 220, 255, 406, 425, 445; Broadcast Production - 591.02: Grammar Proficiency Exam, COMM 220, 405, 406, 419, 445; Journalism and Mass Communication - 591.03: Grammar Proficiency Exam, COMM 220, 405, 406, 424, 445 Media Management - 591.04: Grammar Proficiency Exam, COMM 220, 386, 405, 406, 499; Print Journalism - 591.05: Grammar Proficiency Exam, COMM 220, 300, 424, 440, 502; Public Relations - 591.06: Grammar Proficiency Exam, COMM 220, 230, 390, 424, 476. (F,S,SS)

**COMM 592. Cable Television Seminar****(Formerly COMM 492 & SPCH 491)****Credit 3(3-0)**

This course includes a review of the development of cable television in the U.S., including the law governing it, technical facilities necessary for an operation, methods of financing various



types of programming. The course will also focus on the advantages and disadvantages of minorities in cable programming. Prerequisites: COMM 49 and 522. (F,S,SS)

**COMM 596. Publication Design and Layout (Formerly COMM 496) Credit 3(3-0)**

Instruction in the principles of publication design and layout with actual practice in laboratory publications. Prerequisite: Grammar Proficiency Exam, 220, 424. (F,S,SS)

**COMM 597. Practicum II Credit 1(0-2)**

This course is intended for students to have an overall experience with each major. Students will participate with the student newspaper, TV studio, radio station or in a public relations capacity in university relations. It is an independent study as determined by the student in conjunction with the instructor. Prerequisite: Junior standing. (F,S,SS)

**COMM 598. Media Internship (Formerly COMM 498) Credit 3(1-4)**

Off campus media experience designed to assist students in applying mass communication research and theory in the development of professional practices, skills, and attitudes. Academic supervision provided by faculty members and direction in the field provided by an approved supervisor. \*Note Prerequisites: This course must be taken the semester "after" to enrolling in COMM 591 - Media Workshop, Junior or Senior Standing, There is a different prerequisite for each concentration: However, each concentration requires successful completion of the COMM 591 - Media Workshop with a grade of "C" or better. Electronic Media and Journalism - 598.01: Grammar Proficiency Exam, COMM 220, 231, 255, 406, 425, 435, 445, 475, 591; Broadcast Production - 598.02: Grammar Proficiency Exam, COMM 220, 231, 405, 406, 419, 445, 507, 508, 591; Journalism and Mass Communication - 598.03: Grammar Proficiency Exam, COMM 220, 231, 405, 406, 424, 445, 476, 522, 591; Media Management - 598.04: Grammar Proficiency Exam, COMM 220, 368, 405, 406, 499, 522, 591, BUAD 220, ECON 300; Print Journalism - 598.05: Grammar Proficiency Exam, COMM 220, 231, 300, 424, 440, 502, 530, 540, 591; Public Relations - 598.06: Grammar Proficiency Exam, COMM 220, 230, 231, 390, 424, 476, 486, 591, 596. (F,S,SS)

**COMM 600. Media and Politics Credit 3(3-0)**

This course examines communication as a social behavior incorporating all facets of political science such as foreign policy, the courts, political movements and elections. Prerequisites: POLI 200 and instructors permission. (F,S,SS)

**COMM 601. International Communication Credit (3-0)**

This course involves readings, discussion and papers on the development of international communication in developing countries and the role of communication in international relations. Prerequisites: POLI 200 and instructors permission. (F,S,SS)

**COMM 602. Communication Theory Credit (3-0)**

This course involves readings and discussions examining communication theories. Students will prepare papers on theories of communication. Prerequisite: Instructors permission. (F,S,SS)

**COMM 603. Mass Communication Seminar Credit (3-0)**

This course involves research, discussions, and papers on communication topics. Prerequisite: Instructors permission. (F,S,SS)

**COMM 604. Film Criticism Credit (3-0)**

This course involves an explanation of the development of film and the theory and practice of film criticism. Prerequisite: Instructors permission. (F,S,SS)



- COMM 605. Organizational Communication** **Credit (3-0)**  
 This involves the theory and practice of organizational communication to support organizational objectives, policies, and programs. Prerequisite: Instructors permission. (F,S,SS)
- COMM 606. Business Reporting** **Credit (3-0)**  
 This involves instruction and practice in specific reporting techniques for business and industry. The coverage of trends and strategies will be explored. Prerequisite: Instructors permission. (F,S,SS)
- COMM 607. Medical and Science Reporting** **Credit (3-0)**  
 This course involves instruction and practice in specific reporting techniques for the science and medical industry. The coverage of trends and strategies will be explored. Prerequisite: Instructors permission. (F,S,SS)
- COMM 680. Independent Study in Journalism and Mass Communication** **Credit (3-0)**  
 This course is an independent study in the area of journalism and mass communication to be determined by the student in consultation with the instructor. Prerequisites: Permission of chairperson and instructor, and junior or senior standing.

## DIRECTORY OF FACULTY

- Kathryn Barrett** ..... **Lecturer**  
 B.S., M.S., East Carolina University, Ph.D., University of Wisconsin at Madison
- Jennifer Bell** ..... **Lecturer**  
 B.S., Vanderbilt University; J.D., University of North Carolina at Chapel Hill; M.P.P, Duke University
- June Bethea** ..... **Lecturer**  
 B.A., M.S., South Carolina State University
- Curtis Brandon** ..... **Lecturer**  
 B.A., University of North Carolina at Greensboro, M.A., North Carolina A&T State University
- Linda Callahan** ..... **Associate Professor**  
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- Bruce Clark** ..... **Director of the Television Studio and Lecturer**  
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- Sam Cook** ..... **Lecturer**  
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- Sharita Crossen** ..... **Lecturer**  
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<b>Ingram Hill Land</b> .....	<b>Lecturer</b>
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- Sheila Whitley** ..... **Assistant Professor**  
 A.A., Wingate University; B.A., University of North Carolina at Chapel Hill; M.A., Appalachian State University; Ph.D., University of North Carolina at Greensboro.
- Gail Wiggins** ..... **Assistant Professor**  
 B.A., M.S., North Carolina A&T State University

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## **Department of Visual & Performing Arts**

<http://www.ncat.edu/>

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### **OBJECTIVES**

The Department of Visual and Performing Arts comprises the Programs of Music, Theatre, Visual Arts and a component in Dance. Through an ongoing collaborative process, the Department develops and maintains the artistic-cultural mission of the University. The Department prepares students both academically and artistically for creative leadership roles in a diverse society.

1. to prepare students for professional employment and admission to graduate and professional schools
2. to expand and develop cultural horizons and aesthetic experiences
3. to foster an understanding of and an appreciation for the arts in all students
4. to preserve traditional artifacts and cultural artistic values as perceived from the African American perspective and broader multicultural spectrum
5. to encourage international study, travel, and documentation of the arts

### **Music Program**

<http://www.ncat.edu/~music>

**Judith Womble Howle, Chairperson**

### **OBJECTIVES**

The general objectives of the Division of Music are as follows:

1. to provide the student with basic skills, techniques, pedagogical concepts, and perspectives for a career as an artist and as a teacher of music on the K-12 levels,
2. to contribute to and present an experiential knowledge base which is inclusive of the most neoteric technological advances, instrumentation, and techniques which support the discipline;
3. to interpret, create, and maintain the highest level in individual and group performance in music, and
4. to enhance the cultural and aesthetic life of the university student through personal experiences in a focused program of education in music.

### **DEGREES OFFERED**

Music (Performance) – Bachelor of Arts

Music (General) – Bachelor of Arts

Music Education – Bachelor of Science

The Division of Music offers two major degree programs. One of these is a liberal arts curriculum leading to the Bachelor of Arts in Music degree with concentrations in general music or performance. This degree program is designed to accommodate students who wish to enter some area of music other than teaching. The other degree program is a teacher-education-based curriculum leading to the Bachelor of Science in Music Education with either choral or instrumental concentrations. Students intending to teach in the public schools must follow this curriculum, and the guidelines of the School of Education, to meet certification and graduation requirements. Degree program requirements differ, and are not necessarily interchangeable. Students are advised to check programs carefully.



## **CAREER OPPORTUNITIES**

Successful completion of the requirements of the B.A. degree in Music or the B.S. degree in Music Education provides the students with career opportunities in public school music teaching, and various careers in the performing arts, and/or related disciplines.

## **PROGRAM REQUIREMENTS**

For certified admission to the study of music as a major, all prospective students must successfully pass auditions set by the Faculty panel in the principal applied music area.

To continue in the Division of Music as a major, students must maintain a 2.8 average in all music courses. Students whose averages fall below 2.8 will be placed on Division probation for the following semester of enrollment. Should the average not meet the minimum requirements at the end of the probationary period, their status will be subject to review by the Division Committee on Curriculum, Standards and Measures. Students who have a semester grade of "D" or below in a major course must repeat the affected course(s) and earn a grade of "C" or better before enrolling into any continuation or the next level of said course(s). Student progress will be evaluated at the end of the fourth semester of residency to determine approval for enrollment into upper level (junior classification, 400-600) music courses.

## **MUSIC PERFORMANCE DEGREE REQUIREMENTS**

The Music Performance degree is a highly selective program that maintains specific entry and retention requirements. These requirements may include additional auditions and academic provisions. The Junior and Senior Recitals in this program must be performed from memory.

## **MUSIC EDUCATION DEGREE REQUIREMENTS**

Upon entrance into the music education program, each student must choose either an instrumental or a choral concentration. Those whose principal applied music subject is either voice or piano should select the choral concentration, and those whose principal applied subject is an orchestral instrument should select the instrumental concentration.

Music education students are required to successfully pass PRAXIS I by the end of the Freshman year (2<sup>nd</sup> Semester). Students must complete all admissions requirements for the Teacher Education Program by the end of the sophomore year. At this time academic work and general prospects as a teacher are examined by the Division and the Teacher Education Council. This is accomplished (in part) through special inventories and tests of achievement. Upon acceptance, the student is permitted to enroll in upper level professional education courses. Admission to the teacher-education program of the University is regulated by the School of Education. Policy requires that students take and pass PRAXIS II (Specialty test in major area) before being admitted to student teaching. Students who satisfy all exit criteria are then recommended for a teaching certificate.

## **PERFORMANCE ENSEMBLES**

Each student with a major in music is required to maintain continuous membership in a Division-sanctioned major performance ensemble related to the student's principal performing medium. Division sanctioned ensembles include the following major ensembles: University Bands (marching, concerting, and symphonic), and University Choir, and minor ensembles including the Jazz, Percussion, Woodwind, and Brass ensembles. Participation in more than a single ensemble is possible and encouraged so long as there are no schedule conflicts or violation of University policy concerning student course load.

## RECITAL SEMINAR

Music 307 is required each semester of enrollment as a major in the Division. As a part of this course, attendance is required for all music majors at student or faculty recitals, band, choir, and chamber ensemble concerts, and lyceum programs. A systematic method of checking and recording attendance will be used.

## INSTRUMENTS AND PRACTICE FACILITIES

Several studios are provided as practice facilities for students. Each contains a piano that is tuned regularly and kept in good repair. These areas are reserved for music majors only, and each person using the practice space assumes the responsibility for the maintenance of the instrument provided.

With the exception of piano students, each music major is required to furnish an instrument for personal use. University-owned instruments are primarily intended for ensembles. In as great a quantity as is possible, University-owned instruments will be provided for the instruction of music majors involved in music education classes.

## REQUIRED MAJOR COURSES FOR MUSIC

### (Performance)

MUSI 100	MUSI 300	MUSI 404
MUSI 101	MUSI 301	MUSI 408
MUSI 102	MUSI 309	MUSI 409
MUSI 113	MUSI 302	MUSI 410
MUSI 114	MUSI 303	MUSI 411
MUSI 119	MUSI 304	MUSI 412
MUSI 120	MUSI 305	MUSI 413
MUSI 121	MUSI 306	MUSI 427
MUSI 200	MUSI 308	MUSI 450
MUSI 201	MUSI 307	MUSI 501
MUSI 213	MUSI 400	MUSI 503
MUSI 214	MUSI 402	MUSI 513
MUSI 218	MUSI 403	MUSI 550
MUSI 260		

### (General)

MUSI 101	MUSI 201	MUSI 309
MUSI 102	MUSI 216	MUSI 400
MUSI 113	MUSI 220	MUSI 402
MUSI 114	MUSI 221	MUSI 403
MUSI 120	MUSI 300	MUSI 404
MUSI 213	MUSI 302	MUSI 501
MUSI 214	MUSI 301	MUSI 551
MUSI 200	MUSI 307	

### (Education)

MUSI 100	MUSI 213	MUSI 403
MUSI 101	MUSI 214	MUSI 404
MUSI 102	MUSI 218	MUSI 413
MUSI 105	MUSI 260	MUSI 415
MUSI 113	MUSI 300	MUSI 424
MUSI 114	MUSI 301	MUSI 428
MUSI 119	MUSI 309	MUSI 429
MUSI 120	MUSI 307	MUSI 501
MUSI 200	MUSI 400	MUSI 503
MUSI 201	MUSI 402	MUSI 593

# CURRICULUM GUIDE FOR MUSIC (PERFORMANCE)

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MUSI 119	1	MUSI 119	1
MUSI 120	1	MUSI 121	1
MUSI 101	3	MUSI 102	3
MUSI 113, 123, 133, 143, 153, or 163	2	MUSI 113, 123, 133, 143, 153, or 163	
MUSI 114, 124, 134, 144, 154, 164, or 160	1	MUSI 114, 124, 134, 144, 154, 164, or 160	1
MUSI 300, 301, or 309	1	MUSI 301 or 309	1
MUSI 307	0	MUSI 300, 301, or 309	2
MUSI 302 (or other small ensemble)	1	MUSI 307	0
ENGL 100	3	MUSI 302 (or other small ensemble)	1
HIST 100	<u>3</u>	ENGL 101	3
	16	HIST 101	<u>3</u>
			16

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MUSI 200	3	MUSI 201	3
MUSI 213, 223, 233, 243, 253, or 263	2	MUSI 213, 223, 233, 243, 253, or 263	2
MUSI 214, 224, 234, 244, 254, 264, or 260	1	MUSI 214, 224, 234, 244, 254, 264, or 260	1
MUSI 300, 301 or 309	1	MUSI 301 or 309	1
MUSI 302 (or other small ensemble)	1	MUSI 302 (or other small ensemble)	1
MUSI 307	0	MUSI 307	0
FOLA I	3	MUSI 218	2
MATH 101	3	MATH 102	3
SPELCH 250	<u>3</u>	FOLA II	<u>3</u>
	17		16

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MUSI 400	3	MUSI 404	3
MUSI 413, 423, 433, 443, 453, or 463	2	MUSI 413, 423, 433, 443, 453, or 463	2
MUSI 302 (or other small ensemble)	1	MUSI 301 or 309	1
MUSI 307	0	MUSI 307	0
MUSI 403	3	MUSI 302 (or other small ensemble)	1
PHYS 110 or MUSI 415	2	MUSI 450	1
FOLA III	3	MUSI	1
BIOL 100	4	FOLA IV	3
	18	PHED 200	<u>2</u>
			14

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MUSI 302 (or other small ensemble)	1	MUSI 513, 523, 533, 543, 553, or 553	2
MUSI 307	0	Free Elective	3
MUSI 427	3	MUSI 301 or 309	1
MUSI 513, 523, 533, 543, 553, or 563	2	MUSI 307	0
MUSI 501	2	MUSI 409 or 411	2
MUSI 614 or 616	2	MUSI 550	3
MUSI 408, 410, or 412	2	MUSI 551	1
PSYC 320	3		12
Free Elective	<u>1</u>		
	16		

Total Credit Hours: 124

## CURRICULUM GUIDE FOR MUSIC (GENERAL)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
HIST 100	3	HIST 101	3
MATH 101	3	MATH 102	3
MUSI 101	3	MUSI 102	3
MUSI 113, 123, 133, 143, 153, or 163	2	MUSI 113, 123, 133, 143, 153, or 163	2
MUSI 114, 124, 134, 144, 154, or 164	1	MUSI 114, 124, 134, 144, 154, or 164	1
MUSI 300, 301, or 309	2	MUSI 300, 301, or 309	2
MUSI 307	<u>0</u>	MUSI 307	<u>0</u>
	16		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HUM 200	3	HUM 201	3
MUSI 200	3	MUSI 201	3
MUSI 213, 223, 233, 243, 253, or 263	2	MUSI 213, 223, 233, 243, 253, or 263	2
MUSI 214, 224, 234, 244, 254, or 264	1	MUSI 214, 224, 234, 244, 254, or 264	1
MUSI 216	3	MUSI 219 or 220	3
MUSI 300, 301, or 309	1	MUSI 300, 301, or 309	1
MUSI 307	0	MUSI 307	0
PHED 200	<u>2</u>	SPCH 250	<u>2</u>
	15		16

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Elective (Rest.)	3	ART 224	2
FOLA I	3	Elective*	3
MUSI 221	3	FOLA II	3
MUSI 302 (or other small ensemble)	1	MUSI 302 (or other small ensemble)	1
MUSI 307	0	MUSI 307	0
MUSI 402	3	MUSI 404	3
MUSI 403	<u>3</u>	SPCH 361	<u>3</u>
	16		15



## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 100	4	Elective*	4
Elective*	4	MUSI 302 (or other small ensemble)	1
MUSI 302 (or other small ensemble)	1	MUSI 307	0
MUSI 307	0	MUSI 415	2
MUSI 501	2	MUSI 551	3
PHIL 260	3	MUSI 618 or PSYC 329	3
THEA 201	3		13
	17		

Total Credit Hours: 127

## ELECTIVE OPTIONS

(\*) The General Music degree program requires eleven (14) hours of related elective courses, all which lead directly to the culminating research project (MUSI 551). The courses must be selected from one of the allowable elective blocks inclusive of Musical Theater, Music Communications, Pre-Music Therapy, Music and Recreation, Music Electronics, Performance and Music Business. Any variations on this requirement must have the express written permission of the Major advisor and the Chairperson.

## CURRICULUM GUIDE FOR MUSIC (EDUCATION)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
HIST 100	3	HIST 101	3
MATH 101	3	MATH 102	3
MUSI 101	3	MUSI 102	3
MUSI 113, 123, 133, 143, 153, or 163	2	MUSI 113, 123, 133, 143, 153, or 163	2
MUSI 114, 124, 234, 144, 154, or 164	1	MUSI 114, 124, 234, 144, 154, or 164	2
MUSI 119	1	CUIN 102	2
MUSI 120	1	MUSI 300, 301, or 309	1
MUSI 300, 301, or 309	1	MUSI 307	0
MUSI 307	0		18
	18		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 101	1	BIOL 100	4
FOLA I	3	MUSI 201	3
MUSI 200	3	MUSI 213, 223, 233, 243, 253, or 263	2
MUSI 213, 223, 233, 243, 253, or 263	2	MUSI 214, 224, 234, 244, 254, or 264	1
MUSI 214, 224, 234, 244, 254, or 264	1	MUSI 218	2
MUSI 300, 301, or 309	1	MUSI 300, 301, or 309	1
MUSI 307	0	MUSI 307	0
PHED 101	1	PHED 200	2
SPCH 250	3		17
	15		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MUSI 105	1	CUIN 436	3
MUSI 300, 301, or 309	1	CUIN 530	2
MUSI 307	0	MUSI 300, 301, or 309	1
MUSI 402	3	MUSI 307	0
MUSI 403	3	MUSI 404	3
MUSI 413, 423, 433, 443, 453, or 463	2	MUSI 413, 423, 433, 443, 453, or 463	2
MUSI 415	2	MUSI 429	<u>2</u>
MUSI 428	2		13
PSYC 320	<u>3</u>		
	17		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 400	3	CUIN 500	3
CUIN 531 or 532	3	CUIN 560	6
Ensemble Elective	1	CUIN 624	<u>3</u>
MUSI 307	0		12
MUSI 430	2		
MUSI 501	2		
MUSI 614 or 616	2		
MUSI 593	<u>2</u>		
	15		

Total Credit Hours: 124

*\* Music education majors with emphasis in voice will enroll in MUSI 120, Instrumental concentrators will enroll in MUSI 119 and Piano concentrators will enroll in MUSI 260 (based on exhibited skills, the Piano teacher may delay enrollment in this course until later semesters).*

*+MUSI 593 may not be taken concurrently with CUIN 560.*

## COURSE DESCRIPTIONS IN MUSIC THEORY

### **MUSI 101/102. Theory I and II**

**Credit 3(2-2)**

This course includes a review of the fundamentals of music, including the rudiments of music theory- construction and function of scales; intervals, triads and dominant seventh chords in root position and inversions; use of non-harmonic tones; correlated analysis, rhythmic, melodic, harmonic, and keyboard drill. (F;S)

### **MUSI 110. Fundamentals of Music**

**Credit 3(1-4)**

This is a comprehensive study of the rudiments of music: notation, intervals, scales, keys, and rhythm. The course is designed for the entering music major and is an elective for non- majors. This course may not be used for credit toward degrees in music. (F;SS)

### **MUSI 119. Sight Singing and Ear Training**

**Credit 1(0-2)**

This course is the study of the fundamentals of musicianship; correlated rhythmic, melodic, and harmonic drills. (F;S)

### **MUSI 155. Gospel Improvisation-Vocal**

**Credit 2(0-4)**

This is a survey course designed to teach standard vocal techniques of Gospel music. Areas of instruction will include such topics as proper posture, breathing techniques and concepts, vocal pedagogy, vocal alterations, rearranging, and spontaneous composition of melodic lines. Students enrolling in this course must demonstrate the ability to match pitches, and replicate dictated melodic content. This course may be repeated for two additional credits. Courses MUSI155 and MUSI165 may be taken simultaneously with the approval of the vocal and keyboard instructors. (DEMAND)

**MUSI 165. Gospel Improvisation-Keyboards****Credit 2(0-4)**

This is a survey course designed to teach the fundamentals of keyboard improvisation in Gospel music. Emphasis will be placed on the basic elements of music importance of instrumentation, meter and tempo, melody and harmony. Students enrolling in this course must demonstrate basic improvisational keyboard skills. This course may be repeated for two additional credits. Courses MUSI155 and MUSI165 may be taken simultaneously with the approval of the vocal and keyboard instructors. (DEMAND)

**MUSI 200/201. Theory III and IV****Credit 3(2-2)**

Modulation, construction and function of seventh, ninth, eleventh, and thirteenth chords in root position and inversions; chromatic harmony; advanced modulation; trends of the twentieth century; corrected analysis, sight singing, ear training, dictation, and keyboard drill will be studied. Prerequisites: Music 101 and 102. (F;S)

**MUSI 402. Form and Analysis****Credit 3(3-0)**

Harmonic and melodic structure of the phrase- phrases in combination- the analytical methods; theme and variation, ternary, rondo, binary, sonata, concerto and unique forms; the fugue and related genres will be examined. Prerequisites: MUSI 200 and 201. (S)

**MUSI 414. Composition****Credit 3(2-2)**

This course includes an introduction to the basic elements of creative writing- melodic writing; organization and structure of musical sound; various approaches to the development of thematic and harmonic materials; as well as orchestration as it applies to composition. Prerequisites: MUSI 101, 102, 200, 201, and/or consent of instructor. (DEMAND)

**MUSI 501. Arranging****Credit 3(2-2)**

Scoring for chorus, band, orchestra, vocal and instrumental chamber ensembles will be studied. Prerequisites: MUSI 400 and 401. (F;SS)

**MUSI 516. Electronic Music Composition****Credit 2 (1-2)**

This course is a continuation of MUSI-416, and will explore advanced musical composition using electronically generated sounds. The compositions created in this course by students may be prerecorded sequences and/or interactive performances with some acoustic sounds. Project assignments will include the creation of electronic compositions that will be premiered at a public concert and used in the senior project. (DEMAND)

**MUSIC HISTORY AND LITERATURE****MUSI 216. Music Appreciation I****Credit 3(3-0)**

This course is a study of melody, harmony, rhythm, simple forms, vocal music, texture and the orchestra. It is designed for the general student to provide an introductory survey to the art of music. (F;S;SS)

**MUSI 217. Music Appreciation II****Credit 3(3-0)**

This course is a survey of the literature and styles of the several periods of music history from antiquity through the present. It is designed for the general student as a continuation of Music Appreciation I. Prerequisite: MUSI 216. (DEMAND)

**MUSI 218. Introduction to Music Literature****Credit 2(2-0)**

This course will present a study of western and non-western music, and will include analysis of music literature from western culture and a select group of non-western cultures. The musical styles will be studied chronologically except when no historical data is present. In the case of that exception (ex.: Native American Music or African Music), those styles will be studied in the time period that historical data is present (written accounts or recordings). (F)



**MUSI 219. History of Gospel Music****Credit 3(3-0)**

This course will present a survey of the historical development of African-American Gospel Music. Emphasis will be placed on the stylistic and evolutionary development of the music and its significant contributions. This course may be taken as fulfillment of the Black-Global Studies requirement. (F)

**MUSI 220. History of Black Music in America****Credit 3(3-0)**

This course is a study of black American music from the 17th century to the present. Emphasis is placed on musical forms and styles within the social, economic, and political areas. Formal musical training desirable but not required. Humanities credit given. (S;SS)

**MUSI 221. History of Jazz****Credit 3(3-0)**

This is a general survey course of the history of jazz from its beginnings to the present, with major emphasis placed on the stylistic and evolutionary development of the music and the significant contributors to jazz styles. Lectures will be supplemented by films, slides, demonstrations, live concerts, and phonograph recordings. Course is open to non-music majors as well as music majors. No formal knowledge of music theory and history or previous background in music is necessary for enrollment. (F;S;SS)

**MUSI 226. History of Electronic Music****Credit 3 (3-0)**

This course will survey electronic music pioneers from the early twentieth century through the latest twentieth century developments with implications for the twenty-first century. Cahill, Cage, Vare'se, Stockhausen, Babbitt, Moog and Chowing are some of the electronic composers who will be studied. (DEMAND)

**MUSI 403. History and Literature of Music I****Credit 3(2-2)**

This course includes analyses of main works of music literature presented in historical order; form, harmonic, and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic artistic and cultural developments—Ancient, Medieval, Renaissance and Baroque periods. Prerequisites: MUSI 101 and 102. (F)

**MUSI 404. History and Literature of Music II****Credit 3(2-2)**

This course is an analysis of main works of music literature presented in historical order, form, harmonic and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic, artistic, and cultural development—Classical, romantic, Postromantic and contemporary periods. Prerequisite: MUSI 403. (S)

**MUSI 405. Music of the Baroque Period****Credit 2(1-2)**

An analysis of the main works of the principal composers of the early, middle, and late Baroque periods culminating with a more detailed study of the works of Handel and J.S. Bach will be studied; vocal, keyboard and other instrumental forms are included; emphasis is on stylistic characteristics. Prerequisite: MUSI 403. (DEMAND)

**MUSI 406. Music of the Romantic Period****Credit 2(1-2)**

This course includes intensive study of the works of the principal composers of the Romantic era; emphasis is on general and individual stylistic characteristics. Prerequisite: MUSI 404. (DEMAND)

**MUSI 407. Modern Music from 1890 to the Present****Credit 2(1-2)**

The music of the so-called Viennese school of the twentieth century against the background of late German romanticism and French impressionism will be studied; the dissolution of the tonal system and the development of the serial principle— the music of Bartok, Stravinsky and others in the light of nineteenth and twentieth century investigations of folk or national materials and their influence upon serious artists; the relationship of Bartok and Stravinsky to traditional harmonic principles and to the formal structures of the past; and other trends in the twentieth century will be studied. Prerequisites: MUSI 201 and 404. (DEMAND)



**MUSI 408. The Symphony****Credit 2(1-2)**

This course is the study of the formulation of classical principles of construction by Josef Haydn, with reference to the contributions of Gluck C.P.E. Bach and the Mannheim school; the fulfillment of the classical ideal of the works of Mozart and Beethoven; changing concepts of the symphony after Beethoven; the Romanticists' approach to form; and study of the major Romantic symphonies by composers from Schubert to Mahler. Prerequisites: MUSI 201 and 404. (DEMAND)

**MUSI 409. Keyboard Music****Credit 2(1-2)**

Techniques, musicianship, and stylistic aspects of interpretation from pre-Bach to the present; intellectual, emotional, and imaginative aspects of performance as exemplified by works from leading composers including Bach, Mozart, Haydn, Beethoven, Chopin, Schumann, Debussy, and Moussorgsky will be studied; all lectures illustrated at the piano. Prerequisite: MUSI 404. (S)

**MUSI 410. Opera****Credit 2(1-2)**

The establishment of the opera as a feasible musico-dramatic genre and the various solutions to problems of the opera as suggested by composers from the seventeenth to the twentieth centuries will be examined; special emphasis will be placed on the works of Monteverdi, Scarlatti, Gluck, Mozart, Wagner, and Verdi. Prerequisites: MUSI 201 and 404. (F)

**MUSI 411. The Art Song****Credit 2(1-2)**

This course is a survey of the art song from seventeenth century Italy to present, with special emphasis on the song literatures of Germany, France, and contemporary America- practice in interpretation with particular attention to style and diction. Prerequisite: MUSI 404. (S)

**MUSI 412. Chamber Music****Credit 2(1-2)**

This course provides an analysis of masterworks of chamber literature for instrumental and vocal ensembles by the main composers for each of the several periods in music history and interpretation. Prerequisite: MUSI 404. (DEMAND)

**MUSIC EDUCATION****MUSI 105. Class Guitar I****Credit 1(0-2)**

This course provides basic instruction in guitar performance for the beginner using a programmed, audio-visual format. Designed for the general college student; the course requires no previous experience with music. (S)

**MUSI 106. Class Guitar II****Credit 1(0-2)**

This is a continuation of MUSI 105. Prerequisite: MUSI 105. (DEMAND)

**MUSI 111. Basic Performance Techniques****Credit 2(0-4)**

This is a study of the basic elements of tone production, reading, techniques and style in the performance of instrumental or vocal music. The course is designed for entering music majors with deficiencies in the primary performance medium and as a music elective for non-majors. This course may not be used for credit toward degrees in music. (DEMAND)

**MUSI 225. Introduction to MIDI****Credit 2 (2-1)**

This course will introduce the concepts and functions of Musical Instrument Digital Interface (MIDI) devices that are used in the creation of musical compositions, scores, and recordings. (DEMAND)

**MUSI 415. Music Synthesis****Credit 2(2-0)**

This course is an introduction to electronic music, both in its technology and its role in reshaping musical traditions. The course will emphasize waveform analysis with the related mathematical and acoustical concepts. Units will include a history of electronic musical instruments, related acoustics, exploration of various methods of synthesis, and spectra analyses of

waveforms using the mathematics developed by Fourier. Students will create original or mutated timbre for use in an original arrangement or composition. The use of the computer as a tool for composition and score production will be explored. (F)

**MUSI 416. Electronic Music**

**Credit 2(1-0)**

This course is designed to introduce the student to electronic music and how it is created. Topics to be covered will be the history of electronic music, the use and possible applications of the tape recorders, mixers, amplifiers, speakers, microphones, sound generators, synthesizers, etc., and the proper maintenance of all the equipment utilized. Each student will arrange two or more hours per week to work alone in the Electronic Music Studio with the equipment and materials. The creation of original compositions will be a project assignment to be premiered at a public concert. (S)

**MUSI 427. Voice Pedagogy**

**Credit 2(1-2)**

This course includes the following: use of the singing voice; basic principles of singing, interpretation and musicianship; physiology, breathing; tone production, resonance and diction. The application of basic principles to the singing voice; pronunciation, articulation, intonation, attack, legato, sostenuto, flexibility and dynamics; ensemble singing; techniques for producing choral tone in accompanied and unaccompanied styles, choral procedure and repertoire. (F)

**MUSI 428. Music Pedagogy I (strings & Vocal)**

**Credit 2(2-0)**

This course is designed for the Music Education major. This course will present basic instructional techniques for playing orchestral stringed instruments. It also will present training in use of the singing voice including basic principles of singing, breathing, tone production, resonance and diction.

**MUSI 429. Music Pedagogy II (Brass & woodwinds)**

**Credit 2(2-0)**

This course is designed for the Music Education major. This course will present basic instructional techniques for playing orchestral brasswind instruments.

**MUSI 430. Music Pedagogy III (Percussions)**

**Credit 2(2-0)**

This course is designed for Music Education majors. This course will present basic instructional techniques for playing percussion instruments inclusive of Snare Drum, Timpani, Xylophone, Bells, Chimes, and other percussion instruments.

## **PERFORMANCE ORGANIZATIONS**

The total number of semester hours to be earned through performance organization courses is specified in the outlines of major curricula. Each student with a major in music is required to maintain continuous membership in a Division-sanctioned performance ensemble. If the principal applied subject is a wind or percussion instrument, the student must elect band; if the principal applied subject is voice or piano, the student must elect choir. The organization elected must be repeated each semester as specified until the required number of semester hours has been earned. Other performance organization courses are elected as required of the several curricula and similarly repeated for credit until the necessary semester hours have been earned.

**MUSI 300. University Bands**

**Credit 2(0-5)**

The University Marching Band is organized in the fall of the year (first semester) and plays for all football games. It is open to all qualified students, both men and women. The Symphony Band functions after the football season and continues for the rest of the year. Membership in both the Symphony and Marching Bands is through audition with the Director of Bands. May be repeated for credit each semester. (F;S)

**MUSI 301. University Choir****Credit 2(0-5)**

This is an organization designed to perform a diversity of choral literature ranging from the classics to gospel. Numerous on and off-campus public appearances, as well as at least one tour are planned each year. Membership is open to all qualified students by audition. May be repeated for credit. (F;S)

**MUSI 302. Brass Ensemble****Credit 1(0-2)**

The study and performance of literature for brass instrument chamber groups from all periods of music history and in all styles are included as well as frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester. (F;S)

**MUSI 303. Woodwind Ensemble****Credit 1(0-2)**

This course is the study and performance of literature for woodwind chamber music groups and in all styles. There will be frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester. (F;S)

**MUSI 304. Percussion Ensemble****Credit 1(0-2)**

This course is a study and performance of literature for percussion chamber groups representing a wide variety of styles. It is designed to develop skill in ensemble performance on all of the instruments of percussion used in this growing modern repertoire. Membership is open to all qualified students, both men and women, through audition with the director. Frequent public concerts. May be repeated for credit each semester. (F;S)

**MUSI 305. Opera Workshop****Credit 1(0-2)**

Musical and dramatic group study and performance of excerpts from the operatic repertoire will be included. This course includes an annual production of a standard opera and/or contemporary chamber work, with staging, costumes, and scenery. Students must secure the approval of their university voice instructor before enrolling. May be repeated for credit each semester. (DEMAND)

**MUSI 306. Chamber Singers****Credit 1(0-2)**

This is a choral organization which is designed to perform a wide variety of compositions written for voices representing various musical styles and periods will be included as well as frequent public concerts. Membership is open to qualified students through audition with the director. May be repeated for credit each semester. (F;S)

**MUSI 307. Recital Seminar****Credit 0(0-1)**

This is a weekly assembly of music students with members of the faculty, providing opportunity for experience in public performance before an audience, lecture and discussion of problems in the general area of performance, including ensemble playing and singing, conducting, accompanying, stage deportment, also performance. (Required of all music majors during each semester of residence; a grade of pass (P) or fail (F) will be assigned on the basis of participation and attendance.) (F;S)

**MUSI 308. University Jazz Ensembles****Credit 1(0-2)**

This course involves the study and performance of jazz literature in all styles and idioms with special emphasis on contemporary compositions. Membership is open to all qualified students through audition with the director. May be repeated for credit each semester. (F;S)

**MUSI 309. University Orchestra****Credit 2(0-4)**

This is an organization designed to perform a wide range of orchestral compositions representing various musical styles, and periods. Emphasis is placed on the more important of the standard symphonic works from the eighteenth, nineteenth, and twentieth centuries. Membership is open to all qualified students through audition with the director. May be repeated for credit each semester. (DEMAND)



## APPLIED MUSIC

Individual instruction is available in the following branches of applied music as both principal and secondary areas of study:

Piano	Flute	Bassoon	Trombone
Voice	Oboe	French Horn	Baritone Horn
Percussion	Clarinet	Trumpet	Tuba

In the principal area of performance, each student receives a one hour individual lesson each week and must practice for at least two hours each day to earn two semester hours credit. In the secondary area of performance, each student receives two hours of lab instruction each week and is required to practice a minimum of one hour each day to earn one semester hour credit. (F;S)

### **MUSI 503. Score Reading and Conducting**

**Credit 2(1-2)**

This course is the study of the fundamental conducting beat patterns, size of beats, and use of each hand; discussion and study of musical terminology; conducting experience with laboratory group. Transposition; characteristics and ranges of instruments-study of tempos and dynamics; and continued conducting experience with both choral and instrumental laboratory groups will be studied. (F)

### **MUSI 450. Junior Recital**

**Credit 1(0-2)**

This course is designed for the Junior music performance major to demonstrate proficiency on their major instrument in a formal concert setting.

### **MUSI 550. Senior Recital**

**Credit 1(0-1)**

This course is designed for the senior music major to demonstrate a high level of proficiency on a chosen instrument or in an applied music field (either brass, woodwinds, percussion, voice, strings or keyboards) in a concert situation. The course will culminate in a formal concert performance of hallmarks of music literature. This course is taken concurrently with MUSI 513. For Bachelor of Arts- Performance majors the recital should be presented during the second semester of MUSI 513. Prerequisites: MUSI 113, 213, and 413. (DEMAND)

### **MUSI 593. Applied Performance Recital**

**Credit 2(0-2)**

This course is designed for the senior Music Education major to satisfy the final undergraduate semester requirements of applied music study and performance. The student will receive appropriate Senior-level studio instruction, followed by a faculty jury hearing and culminating with a formally evaluated solo concert performance of hallmarks of musical literature. Prerequisites: MUSI 113, 213, and 413. (DEMAND)

### **MUSI 114, 124, 134, 144, 154, 164. Applied Music Secondary I**

**Credit 1(0-1)**

This course is semi-private or class study on a secondary instrument. Students whose principal performing medium is voice or one of the orchestral instruments are required to study the piano as the secondary instrument. Students whose principal performing medium is the piano may choose either voice or an orchestral instrument as the secondary instrument. Piano students pursuing the music education curriculum with a choral concentration must study voice as the secondary applied area. Emphasis is placed on the development of sound basic performance technique. May be repeated for credit. Two semesters are required. (F;S)

### **MUSI 214, 224, 234, 244, 254 or 264. Applied Music Secondary II**

**Credit 1(0-1)**

This course includes continued development of basic performance skills that were begun in MUSI 114. Attention will be given to preparation for the comprehensive examination on the secondary instrument required of all students. (F;S)



## PIANO

*Requirements for Admission:* Applicants must perform representative Classical works from major keyboard periods (Baroque, Classical, Romantic, 20<sup>th</sup> Century or Contemporary). Technical exercises such as scales and arpeggios may also be requested.

### **MUSI 163. Principal Applied Piano** **Credit 2(0-2)**

This course includes a three-part invention by Bach; a movement of a Sonata by Haydn, Mozart, or Beethoven; a work of moderate difficulty by a Romantic composer; scales and arpeggios in parallel or contrary motion at a moderately rapid tempo; and sight-reading. (F;S)

### **MUSI 260. Accompanying** **Credit 1(0-2)**

This course includes analysis and practice in piano accompaniment of singers and instrumentalists; sight-reading and transposition; discussion of style and performance; experience in public performance. May be repeated for credit each semester. Prerequisite. Consent of instructor. (DEMAND)

### **MUSI 263. Principal Applied Piano** **Credit 2(0-2)**

This course includes a prelude and fugue from the Well Tempered Clavier by Bach; completion of the Sonata started in 163; a work from the Romantic school; a work written since 1900; scales and arpeggios at rapid tempo; and sight reading. (F;S)

### **MUSI 463. Principal Applied Piano** **Credit 2(0-2)**

This course includes dance forms from French suites or parties by Bach; a sonata by Haydn, Mozart or Beethoven one movement memorized; a work from the Romantic school; a contemporary work; and sight reading. (F;S)

### **MUSI 563. Principal Applied Piano** **Credit 2(0-2)**

This course includes a prelude and fugue from the Well-Tempered Clavier by Bach, a sonata by Haydn, Mozart, or Beethoven, one movement memorized; a work from the Romantic school; a contemporary work; and sight reading. (F;S)

## VOICE

*Requirements for admission:* The voice applicant must demonstrate the ability to read standard Western musical notation, match pitches and replicate dictated patterns. An English Language art song in required, however other language performances will be considered.

### **MUSI 120. Music Diction I** **Credit 1(0-2)**

This course is designed to familiarize the voice student with the pronunciation of the English and Italian languages through the study and use of the International Phonetic Alphabet. (F)

### **MUSI 121. Music Diction II** **Credit 1(0-2)**

This course is designed to familiarize the voice student with the pronunciation of the German and French languages through the study and use of the International Phonetic Alphabet. (S)

### **MUSI 153. Principal Applied Voice** **Credit 2(0-2)**

1. Competencies: Correct posture, breathing habits, phrasing, various five-note scales, diction.
2. Studies: Simple English and Italian art songs, folk songs, spirituals.
3. Solos: Six songs in English and Italian to be memorized each semester. Representative composers: Scarlatti, Handel, Purcell.

### **MUSI 253. Principal Applied Voice** **Credit 2(0-2)**

1. Competencies: Correct posture, breathing habits, phrasing, diction, scales and arpeggios.
2. Studies: English and Italian art songs, German art songs, folk songs, spirituals.
3. Solos: English songs in English, Italian, and German to be memorized each semester. Representative composers: Durante, Scarlatti, Schumann.

**MUSI 259. Singing for Actors****Credit 2(2-0)**

This course will present instruction in the development of singing techniques as presented in the "Broadway" theatrical style. The focus is placed upon the relationship between singing and speaking, designed to enhance understanding and performance presentation of both. Emphasis is placed on breath control, resonance (vowels), articulation (consonants); exploration and expansion of individual voice quality; range intonation and vocalization. Literature studies will be selected from that which is characteristic in genre of the Broadway theatrical style. Prerequisites: Permission of the instructor. (F)

**MUSI 453. Principal Applied Voice****Credit 2(0-2)**

1. Competencies: Continuation of 213.
2. Studies: English and Italian art songs, German songs, French art songs, folk songs and spirituals.
3. Solos: Nine songs in English, Italian, German, and French to be memorized each semester. Representative composers: Schumann, Schubert, Strauss, Faure, Britten, Mozart.

**MUSI 553. Principal Applied Voice****Credit 2(0-2)**

1. Competencies: Continuation of 413 with emphasis on preparation for senior recital.
2. Studies: Continuation of 413 with more intricate scales and arpeggios.
3. Solos: 10 songs in English, German, Italian, and French to be memorized. Representative composers: Wolf, Schumann, Faure, Verdi, Britten, Handel, Debussy.

**PERCUSSIONS**

*Requirements for Admission:* The candidate shall demonstrate satisfactory performing ability in at least one of the following areas of percussion:

*Performance:* Snare drum, Xylophone, marimba and timpani. These competencies will include:

1. The ability to perform a solo.
2. The ability to perform an excerpt from a book in which the applicant has studied that will demonstrate musicianship and technical skill.
3. The ability to play at sight representative literature which is characteristic of the instrument.
4. Previous ensemble in band and/or orchestra. Additional competencies for snare drum:
  - a. Basic knowledge of rudiments.
  - b. The performance of a Sousa march or the equivalent.

Additional competencies for xylophone marimba: The ability to play major scales through 4 flats and 4 sharps in one octave.

Additional competencies for timpani:

- a. Basic knowledge of timpani techniques.
- b. A thorough knowledge of the range of each timpano.

**MUSI 143, 243. Principal Applied Percussions**

1. Competencies:
  - a. Snare Drum: Fundamentals, military techniques, reading and control.
  - b. Mallets: Fundamentals, reading technique-musical orientation.

2. Studies: Price, Beginning Snare Drum; Goldeberg, Mallet Instruments; Stone, Stack Control; Bower, Drum Method; Gardner, Modern Method, Book 1, Stone, Mallet Control.
3. Solos: Wilcaxon, Rudimental Solos; Price, Exhibition Drum Solo; Colgrass, Advanced Snare Drum Solo; Brever Easy -Medium Mallet Solos; Stone, Military Drum Beats.

### **MUSI 443, 543. Principal Applied Percussions**

1. Competencies:
  - a. Snare Drum: Fine control, orchestra techniques.
  - b. Mallets: Reading, advanced techniques, tambourine, castanets, brass drum, and cymbals.
  - c. Timpani: Kettle technique, tuning exercises and control.
  - d. Latin-American Instruments.
  - e. Percussion: "Trap" techniques, tambourine, castanets, brass drum, and cymbals. Basic skills on each.
2. Studies: Price, Techniques and Exercises for Triangle, Tambourine and Castanets; Brewer, Daily Studies; Goldenberg, Mallet Instruments. Goodman, Timpani Method-Fresia, Timpani Method- Tourte, Snare Drum Technique; Gardner, Modern Method, Book II, Mallets, Chopin, Advanced Techniques for the Modern Drummer.
3. Solos: McKenzie, Graded Timpani Solos; Britton, Timpani Solo-Hart, Timpani Solos; Price, Unaccompanied Timpani Solos; Brewer, 3 and 4 Mallet Solos, Quick 3 and 4 Mallet Solos; Stone Rudimental Drum Solos; Duets and Quintets.

### **WIND INSTRUMENTS**

*Requirements for Admission:* The candidate shall show evidence of the following:

1. Basic development in embouchure and articulation.
2. Knowledge of fingering and alternates.
3. Satisfactory tone quality and control.
4. Ability to play major scales through 4 flats and 4 sharps, in eight notes (M.M.d-72) and the chromatic scale both slurred and articulated.
5. Minimum-Two octave range.
6. Ability to play a simple song demonstrating musicianship which includes phrasing and expression.
7. Previous study in the equivalent of the Rubank Advanced Method.
8. Previous ensemble experience in band and/or orchestra.
9. Ability to play at sight representative literature which is characteristic of the instrument.

### **MUSI 113-1, 213-1. Principal Applied Trumpet**

1. Competencies: Breathing; elementary embouchure and tone production; tonguing as applied to various articulations; coordination of tone production habits through progressive major and minor scales; practical problems of artistic performance.
2. Studies: "Studies: Arban's selected studies; selected studies by Getchell, Hovey, Hering and Clarke."
3. Literature-Selected from NIMAC-Music Educator's National Conference.



### **MUSI 413-1, 513-1. Principal Applied Trumpet**

1. Competencies: Intonation; embouchure techniques; breath control and tone quality; articulation; reading; style; performance techniques.
2. Studies: Rubank, Advanced Method, Arbam Cumpleti Method for Trumpet, Fischer; Laube - CIB Contest Album; Bantold-Orchestral Excerpts.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

### **MUSI 113-2, 213-2. Principal Applied French Horn**

1. Competencies: Breathing, embouchure and tone production; tonguing; progressive major and minor scale technique; practical problems of artistic performance.
2. Studies: Rubank, Intermediate Method for French Horn; Modern Pares Foundation.
3. Studies: Whistler, Daily Exercises for French Horn, Pottag.
4. Literature: Selected from NIMAC-Music Educator's National Conference.

### **MUSI 413-2, 513-2. Principal Applied French Horn**

1. Competencies: Intonation, embouchure techniques, breath control and tone quality; articulations; reading; style; performance techniques.
2. Studies: Rubank, Advanced Method for French Horn.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

### **MUSI 123-1, 223-1. Principal Applied Trombone-Baritone**

1. Competencies: Breathing, elementary embouchure and tone production- tonguing as applied to various instruments, coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.
2. Studies: Trombone and Baritone, Arbans-Prescott Method for Trombone-Baritone-Carl Fisher, Inc., Rubank Intermediate Method for Trombone-Baritone. Skornicka and Boltz Rubank, Rubank, Inc. Modern Pares Foundation. Studies for Trombone and Bariton-Whistler.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

### **MUSI 423-1, 523-1. Principal Applied Trombone-Baritone**

1. Competencies: Intonation, embouchure techniques; breath control and tone quality; articulations; reading; style; performance techniques.
2. Studies: Rubank, Advanced Method for Trombone and Baritone.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

### **MUSI 123-2, 223-2. Principal Applied Tuba**

1. Competencies: Breathing, elementary embouchure and tone production; tonguing as applied to various instruments coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.
2. Studies: Tuba, Rubank Intermediate Method for Brass -Skornicka and Bolts, Rubank Inc. First Book of Practical Studies for Tuba-Hovey N. Beiwin, Inc. Vandercook Etudes for Bass-Rubank Inc.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

### **MUSI 423-2, 513-2. Principal Applied Tuba**

1. Competencies: Intonation, embouchure techniques breath control and tone quality; articulation; reading; style, performance techniques.



2. Studies: Rubank, Advanced Method for Tuba.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

#### **MUSI 113-1. Principal Applied Flute**

1. Competencies: Major and minor scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development.
2. Studies: Soussmann, Complete Method for Flute; Anderson, 24 Progressive Studies, Op. 33.
3. Literature: Bizet, Minuet; Mozart, Adagio; Handel, Sonatas.

#### **MUSI 233-1. Principal Applied Flute**

1. Competencies: All Major and Minor scales throughout the practical performing range. Emphasis on sight-reading.
2. Studies: Cavally, Melodious and Progressive Studies for Flute Soussmann.
3. Literature: Bach, Suite in B. Minor; Mozart, concertos.

#### **MUSI 433-1. Principal Applied Flute**

1. Competencies: Continued scale study, emphasis on performing literature.
2. Studies: Soussman-Moyse, Flute Studies.
3. Literature: Bach, Sonatas; Debussy, Syrinx.

#### **MUSI 533-1. Principal Applied Flute**

1. Competencies: Continued emphasis on performing literature.
2. Studies: Schmitd, Orchestral Studies.
3. Literature: Chaminade, Concertino, Hindemith, Sonata.

#### **MUSI 133-2. Principal Applied Oboe**

1. Competencies: Major and Minor scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development.
2. Studies: Ferling, 144 Preludes and Studies; Barrett, Completed Method for Oboe.
3. Literature: Franck, Piece V, Piece in G. Minor; Handel, Sonatas.

#### **MUSI 233-2. Principal Applied Oboe**

1. Competencies: All major and minor scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment.
2. Studies: Barret, Method: Tustin, Technical Studies.
3. Literature: Schumann, Three Romances; Telemann, Concerto in F Minor.

#### **MUSI 433-2. Principal Applied Oboe**

1. Competencies: Continued scale study, emphasis on performing literature. Reed-Making.
2. Studies: Tustin, Studies; Prestin.
3. Literature: Handel, Sonata in G. Minor, Goosens, Concerto.

#### **MUSI 533-2. Principal Applied Oboe**

1. Competencies: Continued emphasis on performing literature.
2. Studies: Orchestral Literature.

### **MUSI 133-3. Principal Applied Clarinet**

1. Competencies: Major and Minor scales through 5 Sharps and 5 flats. Emphasis on fingerings and tonal development.
2. Studies: Klose Celebrated Method for Clarinet and Rose 32 Etudes.
3. Literature: Stubbins, Recital Literature for the Clarinet, Vol. II.

### **MUSI 233-3. Principal Applied Clarinet**

1. Competencies: All major and minor scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment.
2. Klose, Rose 40 Etudes.
3. Literature: Stubbins, Recital Literature, Vols. I and II.

### **MUSI 433-3. Principal Applied Clarinet**

1. Competencies: Continued scale study, emphasis on performing literature.
2. Studies: Baermann, Method for Clarinet; Jean Jean, 18 Etudes de Perfectionnement.
3. Literature: Stubbins, Recital Literature, Vol. III (The Concertos).

### **MUSI 533-3. Principal Applied Clarinet**

1. Competencies: Continued emphasis on performing literature.

### **MUSI 133-4. Principal Applied Saxophone**

1. Competencies: Major and minor scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.
2. Studies: DeVille, Universal Method; Ebdressen, Endrejen, Supplementary Studies.
3. Literature: Handel, Sonatas.

### **MUSI 233-4. Principal Applied Saxophone**

1. Competencies: All Major and Minor scales through the practical performing range. Emphasis on sight reading. Reed adjustment.
2. Studies: DeVille; Rascher, Top Tones for Saxophone.
3. Literature: Bozza, Aria, Casadesu, Romance.
4. Studies: Baermann- Jean Jean, Orchestral Studies.
5. Literature: Bernstein, Sonata; Debussy, Rapsodie.

### **MUSI 433-4. Principal Applied Saxophone**

1. Competencies: Continued scale study, emphasis on performing literature. Introduction to jazz improvising.
2. Studies: DeVille; Rascher, 158 Saxophone Exercises.
3. Literature: Creston, Sonata, Debussy, Rapsodie-Fasch Sonata; Music Minus one Saxophone.

### **MUSI 533-4. Principal Applied Saxophone**

1. Competencies: Continued emphasis on performing literature.
2. Studies: Traler-Lazarus, Virtuoso Studies.
3. Literature: Bozza, Scaramouche.

### **MUSI 133-5. Principal Applied Bassoon**

1. Competencies: Major and Minor scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.

2. Studies: McDowell, Practical Studies, Book I; Kovar, 24 Daily Exercises; Wessen- bom, Practical Method Bassoon.

**MUSI 233-5. Principal Applied Bassoon**

1. Competencies: All Major and Minor scales throughout the practical playing range. Emphasis on sight reading. Reed adjustment and making.
2. Studies: Wesseborn, Method for Bassoon; Kovar, 24 Daily Exercises; McDowell, Practical Studies, Book II
3. Rep. Literature Telemann, Sonata in F Minor, Weber Concerto in F (Slow Movement)

**MUSI 433-5. Principal Applied Bassoon**

1. Competencies: Continued scale study, emphasis on performing literature.
2. Studies: Pierne, Concert Piece, Galliard, Sonatas, Mozart Concerto.

**MUSI 533-5. Principal Applied Bassoon**

1. Competencies: Continued emphasis on performing literature. Orchestral Studies.
2. Studies: Orchestra Passages.
3. Literature: Hindemith, Sonata.

**Advanced Undergraduate and Graduate**

**MUSI 609. Music in Early Childhood** **Credit 3(2-2)**  
 This course is a conceptual approach to the understanding of musical elements, and understanding of the basic activities in music in early childhood; modern trends in music education; and Kodaly and Orff methods. **(DEMAND)**

**MUSI 610. Music in Elementary School Today** **Credit 3(2-2)**  
 This course is the study of music in the elementary school curriculum creating a musical environment in the classroom; child voice in singing, selection and presentation of rote songs; development of rhythmic and melodic expressions; directed listening; experimentation with percussion and simple melodic instruments; criteria for utilization of notational elements; and analysis of instrumental materials. **(DEMAND)**

**MUSI 611. Music in the Secondary School Today** **Credit 3(3-0)**  
 This includes techniques of vocal and instrumental music instruction in the junior and senior high schools; the general music class; the organization, administration and supervision of music programs, as well as music in the humanities. This course includes the adolescent's voice and its care; the testing and classification of voices; operetta production; the instrumental program; and training glee clubs, choirs, bands, and instrumental ensembles. **(DEMAND)**

**MUSI 614. Choral Conducting of School Music Groups** **Credit 2(0-4)**  
 This course includes rehearsal techniques; balance, blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school at all levels of ability; and conducting experience with laboratory group. **(DEMAND)**

**MUSI 616. Instrumental Conducting of School Music Groups** **Credit 2(0-4)**  
 This course includes rehearsal techniques; balance blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school groups at all levels of ability; and conducting experience with laboratory group. **(DEMAND)**

**MUSI 618. Psychology of Music** **Credit 3(2-2)**  
 This course is the study of physical and psychological properties of musical sounds and the responses of the human organism to musical stimuli. **(S)**

**MUSI 620. Advanced Music Appreciation****Credit 3(2-2)**

Analytic studies of larger forms from all branches of music writing will be included. Special emphasis on style and structural procedures by principal composers; works taken from all periods in music history. Designed for students with previous study of music appreciation. (DEMAND)

**RESEARCH****MUSI 551. Independent Study in Music****Credit 3(0-6)**

This is a mentored independent research project, progressing from the proposal stage through final reporting and jury evaluation, devised by the student in consultation with a music faculty advisor. Prerequisites: Permission of selected faculty advisor and Division Coordinator, and junior or senior academic classification. (S; SS)

**DIRECTORY OF FACULTY**

**Hoyt Andres** ..... **Instructor**

B.A., Furman University; M.M., University of Cincinnati; D.M.A., University of North Carolina at Greensboro

**Michael D. Day** ..... **Associate Professor**

B.F.A., and M.M., University of South Dakota; D.M.A., University of Arizona

**John Henry** ..... **Assistant Professor**

B.M.E., M.M.E., University of Akron

**Johnny B. Hodge, Jr.** ..... **Adjunct Professor**

B.A., North Carolina Central University; M.M.; University of North Carolina at Greensboro; Ph.D., The American University

**Judith W. Howle** ..... **Associate Professor and Chairperson**

B.M., Performer's Certificate, University of Rochester; M.M., University of North Carolina at Greensboro

**Jerrye Mooring** ..... **Instructor**

B.A., North Carolina Central University, M.M., East Carolina University

**Karen Rice** ..... **Instructor**

B.A., Eastern Mennonite University, M.M., University of North Carolina at Greensboro

**William C. Smiley** ..... **Professor**

B.M.E., Jackson State College; M.S., University of Illinois; D.M.E., University of North Carolina at Greensboro

**Thomas Swenson** ..... **Instructor**

B.M., Minnesota State University, M.M., University of North Carolina at Greensboro

**Deborah Thacker** ..... **Instructor**

B.M., Eastman School of Music; M.M., University of North Carolina at Greensboro

**Clifford Edward Watkins, I.** ..... **Professor**

B.A., Clark Atlanta University; M.M. and Ph.D., Southern Illinois University at Carbondale



## **Theatre Arts Program**

Theatre.tecbox.com

**Frankie Day Greenlee, Chairperson**

### **OBJECTIVES**

The objectives of the Theatre Arts Program are as follows:

1. to teach students how to use theatre as a means of self-expression, awareness, and discipline,
2. to acquaint students with the great works of the theatre through reading and producing them,
3. to prepare students for professional careers in acting and technology,
4. to prepare students for admission into graduate schools,
5. to convey the skills necessary to promote theatre as a means of enhancing culture in the community, and,
6. to assist students in developing the skills necessary to participate in global Theatre opportunities through studies of the histories and cultures of selected peoples, participate in plays, and meetings with dramatists, actors, artists, and intellectuals from other countries and cultures.

### **DEGREES OFFERED**

Professional Theatre – Bachelor of Fine Arts

(Options: Acting and Theatre Technology)

### **GENERAL PROGRAM REQUIREMENTS**

1. Admission is based upon the general admission requirements of the University. All majors must maintain a minimum grade point average of 2.0. If your GPA drops below 2.0 you will not be cast for any productions or given crew assignments until your GPA is 2.0 or better. Recommendations will be made by your academic advisor to attend tutorial sessions.
2. Students must pass an annual juried evaluation in acting or technology. The evaluation will be based on the improvement in creativity, technique, attitude, and determination.
3. The fulfillment of acting, audition, and crew assignments – except when advance exemptions by faculty have been granted – is expected.
4. Transfer students with previous training will be evaluated by the faculty, who might exempt the student from certain requirements. The exemptions will depend on demonstrated ability and experience.
5. The students must earn at least a “C” in all theatre courses listed on the curriculum guide in his/her concentration.
6. Anyone showing a fundamental weakness in an area of study might be requested by the Theatre Arts Program Chair to take additional course work in the area.

7. Active participation is expected in at least two of the following organizations: The Richard B. Harrison Players, Alpha Psi Omega, NCTC, SETC, the Black Theatre Network, or the National Association of Dramatic and Speech Arts.
8. All students under the acting concentration must audition for all main stage productions, faculty directed studio productions and the Richard B. Harrison Players.
9. All students must participate in load-ins and strikes of all main stage productions—unless excused beforehand by the executive director of theatre, theatre arts program chair, the director of the play, or the technical director.
10. Only graduating seniors will be allowed to appear in off-campus commercial productions. Exceptions for students other than seniors will be considered once the following steps have been completed: (1) The student submits a letter to the theatre program chair stating the producing organization in which he/she is wanting to work, his/her time commitment to the project, the reason he/she wishes to participate in the project and the benefits he/she will receive; (2) An interview with the theatre chair to review current GPA, completed course work, class attendance, past and present theatre participation; (3) An interview with the faculty who will then make the final decision.

### **PROGRAM REQUIREMENTS THE B.F.A IN PROFESSIONAL THEATRE**

#### **(Option: Acting)**

In order to become a candidate for the B.F.A. with an option in Acting, the student must:

1. Make as least a "B" in Acting I and II.
2. Candidates must exemplify:
  - a. Attributes of a professional artist, which includes talent, a willingness to learn and develop, discipline, commitment, and cooperation.
  - b. Potential leadership skills.
  - c. Genuine love, respect, and appreciation of the theatre.
  - d. Active involvement during the first year of residency.
3. Pass a ten-minute acting audition and interview. The acting audition should include two or more of the following contrasting pieces: comedy, drama, tragedy, and song and dance. The passing average is 80%.
4. Present a twenty-minute one-person show (or direct a one-act production) during the senior year,
5. Perform an audition at two of the following events:
  - a. M.F.A. Program
  - b. North Carolina Theatre Conference (NCTC)
  - c. Southeastern Theatre Conference (SETC)
  - d. Irene Ryan Audition
  - e. University/Regional Theatre Audition (URTA)
  - f. Local, Regional or National Professional Theatre Companies
6. To participate in the honors program acting students must maintain a 3.00 average in all performance classes and a 2.8 overall.

In addition to the curricular requirements, the students must complete such co-curricular obligations as (a) the qualifying audition, (b) the progress evaluation, (c) general audition, (d) production assignment, and (e) the senior thesis project.

### THE QUALIFYING AUDITION

This audition will occur in the student's second or third semester of residency, at a date and time to be assigned by the Theatre Arts Program Chair.

1. The Qualifying Audition must be at least ten minutes in length.
2. The judges will consist of the student's academic advisor, along with two members of the faculty.
3. It will be the student's responsibility to select the materials performed. the academic advisor, however, must approve the student's selections.
4. Approval of the material by the academic advisor must be obtained by the end of the semester *prior* to the one in which the student is required to perform. The academic advisor must also approve any subsequent changes the student wishes to make in the selection. (NOTE: These stipulations are for the student's protection. They are designed to guarantee that the student allows sufficient time for preparation and to insure that the material he/she selects is appropriate.)
5. Preparation of the qualifying material is solely the responsibility of the student.
6. The BFA Acting audition will be held the first semester of each year. Should a student's qualifying performance be deemed unsatisfactory, he/she will be required to repeat it the following semester. The Theatre Arts Program Chair will assign a new date. The student's academic advisor must approve any changes in the qualifying material.
7. The comments and opinions of the student's adjudicators will be collected by the academic advisor and communicated orally to the student within one week after the performance. In the event of an unsatisfactory rating, a written explanation will be given to the student.

### PROGRESS EVALUATION

The Theatre Faculty will evaluate each student at the end of each academic year during jury hearings. Evaluation is based on observation of production activities (**quality and quantity**) and on academic progress toward the degree. Recommendations resulting from the evaluation will be reported to the student by the academic advisor.

### AUDITIONS

All Acting students are required to audition for all main stage productions and for the Richard B. Harrison Players, the department's varsity organization. Each student is also required to make a professional audition at two or more of the following: The North Carolina Theatre Conference, Southeastern Theatre Conference, University/ Resident Theatre Conference, the Irene Ryan Acting Award Competition, M.F.A. Acting Programs, Local, Regional, or National Professional Theatre Companies.

### PRODUCTION ASSIGNMENT

Each student must serve as Assistant Director or Stage Manager for at least *one* major departmental production or Studio production. This requirement must be met at some point



during the student's first six semesters of residency. Evidence of its completion must be furnished in writing by the student to the Theatre Arts program chairperson.

## **SENIOR THESIS PROJECT**

The Acting student's degree program culminates with a fully staged (i.e., with appropriate costumes, lighting, props, and staging) performance. At a minimum, the production must be a minimum of twenty minutes. The production is the student's final demonstration of his/her craft proficiency and, as such, is a project the student should begin planning as early as possible in his/her residency. To ensure protection of the student's interests and to provide a reasonable guarantee that a project of the highest quality will result, the Theatre program has adopted specific procedures for the selection, preparation, and execution of the Senior thesis project. This information is listed in detail in the Theatre Arts Student Handbook.

## **THE B.F.A IN PROFESSIONAL THEATRE**

### **(Option: Theatre Technology)**

The Theatre Technology option offers professional training in the crafts and arts of the technician.

The objective is to combine course work in Theatre technology with ample opportunities to construct fully mounted productions. The curriculum is a carefully structured series of courses aimed at covering the full gamut of technical productions. All courses are of practical variety; student technicians are given specific problems and are asked to find workable solutions. Faculty and peer-evaluation assist the student in perfecting skills.

The program presupposes that entering students have little or no background in technical theatre and design. Therefore, we introduce them to design and provide technical background in the crafts. Every student technician spends at least one semester as costume fitter, master carpenter, shop foreman, master electrician, stage manager sound technician, properties master, and assistant technical director. During those semesters, the student is given full responsibility for the areas assigned him/her, with, of course, ample assistance from the faculty. Each student serves a senior directing project as the studio theatre's technical director, allowing him/her the experience of personnel management, purchasing, and scheduling.

It should be noted in this regard that the constant diet of twelve-hour workdays extending to midnight and beyond, which are commonplace for tech students in many institutions is not allowed here. We feel strongly that students spending that much time and energy in shop cannot possibly achieve the full measure of growth in the art. Therefore, all production work is carefully scheduled so that it can be completed no later than 11:00 PM. However, Saturdays and Sundays will be used for specifically called times.

We realize that our students arrive with the kind of total commitment required for success in the theatre. We assume further that they come with basic insights, if not necessarily the kind of training or experience, needed for effective work. We look, therefore, upon our course work as an experimentation and practice. To intensify that experience, the student technician is normally given from four to eight major departmental productions to work in as a technician.

We wish to give the student as much learning time as possible. We assume that students want to leave an undergraduate school ready to deal with the realities of professional theatre work. We consider it our function to provide them with an opportunity to spend at least three years working with what is, in effect, a company with excellent artistic directions that can



assist the student in learning and refining skills and broadening experiences. We do not promise to make every student a great technician; we do promise to make every student as good a pre-professional technician as capability allows.

In order to become a candidate for the B.F.A. with an option in Technology, the student must do the following:

1. Make at least a "B" in Stagecraft and Elements of Play Production.
2. Candidates must exemplify
  - a. Attributes of a professional artist, which includes talent, a willingness to learn and develop, discipline, commitment, and cooperation.
  - b. Potential leadership skills
  - c. Genuine love, respect, and appreciation of the theatre
  - d. Active involvement during the first year of residency
3. Pass an interview, resume and portfolio review. The technology review will consist of the student presenting his/her resume, any and all projects along with their portfolio as it presently stands.
4. Design and/or technically direct a main stage production during the senior year.
5. Present Portfolio and interview at two of the following:
  - a. M.F.A. Program
  - b. North Carolina Theatre Conference (NCTC)
  - c. Southeastern Theatre Conference (SETC)
  - d. United States Institute of Theatre Technology (U. S. I.T.T.I.)
  - e. University/Regional Theatre Audition (URTA)
  - f. Local, Regional or National Professional Theatre Companies
6. To participate in the technology honors program students must maintain a 3.00 average in all Theatre classes and a 2.8 overall.

In addition to the curricular requirements, the student must complete such co-curricular obligations as (a) the qualifying interview (b) the progress evaluation, (c) portfolio and resume presentation (d) production assignment, and (e) the senior thesis project.

### THE QUALIFYING AUDITION

This interview will occur in the student's second or third residence at a date and time assigned to the student by the Theatre Arts Program Chair.

1. The Qualifying Interview must include resume and portfolio.
2. The judges will consist of the student's academic advisor, along with two members of the technology and design faculty.
3. It will be the student's responsibility to select the materials to be included in their resume and portfolio. His/her academic advisor, however, must approve the student's selections.
4. Approval of the material by the academic advisor must be obtained by the end of the semester *prior* to the one in which the student is required to present. His academic advisor must also approve any subsequent changes the student wishes to make in his portfolio. (NOTE: These stipulations are for the student's protection. They are designed to guarantee that the student allows sufficient time for preparation and to insure that the materials he or she selects is appropriate.)

5. Preparation of the qualifying material is solely the responsibility of the student.
6. The B.F.A. Technology interview will be held the first semester of each year. Should a student's qualifying interview and portfolio presentation be deemed unsatisfactory, he/she will be required to repeat it the following semester. The Theatre Arts Program chair will assign a new date. The student's academic advisor must approve any changes in the qualifying material.
7. The comments and opinions of the student's adjudicators will be collected by his/her academic advisor and communicated orally to the student within one week after his/her interview and presentation of portfolio. In the event of an unsatisfactory rating, a written explanation will be given to the student.

### **PROGRESS EVALUATION**

The faculty during jury will evaluate each student at the end of each academic year. Evaluation is based on observation of production activities (quality and quantity) and on academic progress toward the degree. Recommendations resulting from the evaluation will be reported to the student by his/her academic advisor.

### **INTERVIEWS**

All technology students are required to interview for all main stage production positions and for the Richard B. Harrison Players, the department's varsity organization. Each student is also required to make a professional interview at two or more of the following: the North Carolina Theatre Conference, Southeastern Theatre Conference, University Resident Theatre Conference, the United States Institute of Theatre Technology, M.F.A. Design/Technology Programs, Local, Regional or National Professional Theatre Companies.

### **PRODUCTION ASSIGNMENT**

Each student must serve as a member of the (1) running crew, (2) stage manager or assistant stage manager, (3) assistant technical director, or assistant designer for at least *one* major departmental production or Studio production. This requirement must be met at some point during the student's first six semesters of residency. Evidence of its completion must be furnished in writing by the student to the Theatre Arts program chairperson.

### **SENIOR THESIS PROJECT**

The Technology student's degree program culminates with designing or technically directing a fully staged (i.e., with appropriate costumes, lighting, props, and staging) performance. At a minimum, the production must be twenty minutes. The production is the student's final demonstration of his/her craft proficiency and, as such, is a project the student should begin planning as early as possible in his residency.

To ensure protection of the student's interests and to provide a reasonable guarantee that a project of the highest quality will result, the Theatre program has adopted specific procedures for the selection, preparation, and execution of the Senior thesis project. This information is listed in detail in the Theatre Arts Student Handbook.

### **ACCREDITATION**

Accredited by the National Association of Schools of Theatre (NAST) since 1988.

## CAREER OPPORTUNITIES

The mission of the Theatre is to provide opportunities for students to discover themselves, their places, duties, and abilities. Toward this end, the Theatre serves as a laboratory for the development of excellence in pre-professional training in acting and theatre technology.

Careers in theatre other than acting are beginning to unfold. Job opportunities in technical theatre and theatre management are expected to increase with the advent of regional repertory theatres. A degree in professional theatre may also prepare students for careers in drama therapy, interior decorating and design and home planning.

Forecasts for the future of the communication industry are bright. With the development of electronic technology for information dissemination, all aspects of communication will thrive. Entry level positions are numerous, but competition is very keen.

### REQUIRED MAJOR COURSES FOR THEATRE

#### (Acting)

THEA 211	THEA 511	THEA 416
THEA 214	THEA 521	THEA 456
THEA 231	THEA 572	THEA 465
THEA 317	THEA 585	THEA 468
THEA 360	THEA 212	THEA 513
THEA 415	THEA 215	THEA 563
THEA 422	THEA 241	THEA 584
THEA 464	THEA 318	MUSI 259
THEA 467	THEA 401	

#### (Theatre Technology)

THEA 211	THEA 552	THEA 464
THEA 241	THEA 584	THEA 467
THEA 345	ART 100	THEA 542
THEA 360	ART 229	THEA 550
THEA 431	THEA 231	THEA 571
THEA 456	THEA 317	THEA 585
THEA 465	THEA 346	ART 226
THEA 468	THEA 401	THEA Electives
THEA 543	THEA 445	

### CURRICULUM GUIDE FOR PROFESSIONAL THEATRE

#### (Acting)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
HIST 100	3	HIST 101	3
MATH 101	3	MATH 102	3
THEA 211	3	PHYS 101	3
THEA 214	2	THEA 212	3
THEA 241	<u>3</u>	THEA 215	<u>2</u>
	17		17

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA	3	FOLA	3
PHED	1	PHED	1
SOCI 100	3	THEA 318	3
THEA 231	3	THEA 360	3
THEA 317	3	THEA 401	1
THEA 401	1	THEA 416	3
THEA 415	<u>3</u>	THEA 584	<u>3</u>
	17		17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EASC	3	MUSI 259	2
SPCH 250	3	PSYC 320	3
THEA 422	3	THEA 401	1
THEA 464	3	THEA 456	2
THEA 467	3	THEA 465	3
THEA 511	<u>3</u>	THEA 521	<u>3</u>
	18		14

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Free Elective	3	Free Elective	3
Humanities Elective	3	THEA 468	3
THEA 563	3	THEA 513	3
THEA 585	<u>3</u>	THEA 572	<u>3</u>
	12		12

Total Hours: 124

*FOLA placement exam required to determine level of proficiency. Six hours of FOLA required.*

## CURRICULUM GUIDE FOR PROFESSIONAL THEATRE

### (Theatre Technology)

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ART 100	3
HIST 100	3	ENGL 101	3
MATH 101	3	HIST 101	3
PHED	1	MATH 102	3
THEA 211	3	PHYS 101	3
THEA 241	3	THEA 360	<u>3</u>
THEA 401	<u>1</u>		18
	17		

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 226	3	ART 229	3
FOLA <sup>1</sup>	3	FOLA <sup>1</sup>	3
PHED	1	EASC 201	3
SOCI 100	3	POLI 220	3
THEA 231	3	THEA 431	3
THEA 317	3	THEA 401	<u>1</u>
THEA 401	<u>1</u>		16
	17		



## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
THEA 345	3	THEA 346	2
THEA 445	3	THEA 456	3
THEA 464	3	THEA 465	3
THEA 542	3	THEA 543	3
THEA 550	<u>3</u>	THEA 584	3
	15	THEA 552	<u>3</u>
			17

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
THEA Elective	3	Free Elective	3
THEA 467	3	SPCH 250	3
THEA 571	3	THEA Elective	3
THEA 585	<u>3</u>	THEA 468	<u>3</u>
	12		12

Total Hours: 124

*\*FOLA placement exam required to determine proficiency. Six hours of FOLA required.*

## COURSE DESCRIPTIONS IN THEATRE

### **THEA 210. Acting for Non-Theatre Majors** **Credit 3(3-0)**

This course will include an examination and analysis of the actor's craft through improvisation, sensitivity exercises, sense of emotional memory, and other exercises. These are used in order to free the student's mind and body for the work of creating the playwright's world. (F; S)

### **THEA 211. Acting I** **Credit 3(2-2)**

This course will emphasize acting as organic interrelationship of self and environment. Students will learn to release individuality through improvisational exercises in relaxation and physical freedom, along with observation research, justification of action, objectives, talking and listening, inner focus through senses, all focusing on the Stanislavski Method, and on Dialogue and Text. Culminating projects under faculty supervision will be given. Theatre Majors Only (F)

### **THEA 212. Acting II** **Credit 3(2-2)**

This course is a continuation of Acting I with concentration on working on a role; breakdown of text into actions, objectives, beats; sensory work and its application to script. Students will learn developing and sustaining characters and action in increasingly complex texts. Rehearsals and performance of scenes and one-act plays with faculty and student directors will be emphasized. Prerequisite: THEA 211 or consent of the instructor. (S)

### **THEA 214. Theatre Movement I** **Credit 2(1-2)**

This course is an introduction to the development of an expressive body. Emphasis will be placed on entering energy flow, harmonious alignment, Yoga exercises, Alexander technique, modern dance and ballet to achieve flexible, free, strong, and restfully alert body. Students will develop imaginative resources and sense of form through structures of improvisation in space. Theatre Majors Only (F)

### **THEA 215. Theatre Movement II** **Credit 2(1-2)**

The focus of this course will be on movement and breathing to increase range in body and voice, along with some dance techniques and styles. Concepts in weight, space, time, and flow; improvisations; and movement using imagination and forms found in music and dance composition will be emphasized. Prerequisite: THEA 214 or the consent of the instructor. (S)

**THEA 231. Elements of Play Production****Credit 3(2-2)**

Study and application of the basic principles of all phases of theatre production and design as they relate to practical experiences in acting, directing, lighting, scenery design, and construction will be emphasized. Laboratory hours and audience attendance are required. (F)

**THEA 241. Stagecraft****Credit 3(2-2)**

This course will consist of the study of basic principles of physical theatre, evolution of modern stages, building scenery and properties, lighting, makeup, and front-of-house practices. Working on crews and lab hours are required. (S)

**THEA 317. Stage Voice I (Formerly THEA 217)****Credit 3(1-4)**

This course is an introduction to the mechanics of voice for the stage. Special attention will be given in good stage diction, articulation, voice projection, and speaking effectively with non-regional dialect. The student will be introduced to the International Phonetics Association language. (F)

**THEA 318. Stage Voice II (Formerly THEA 218)****Credit 3(1-4)**

Stage Voice II is a continuation of Stage Voice I (THEA 317). Students will improve their stage diction, articulation, and voice projection, while strengthening their comprehensive knowledge of the vocal mechanism. Further exploration and usage of the International Phonetics Association language and its application the use of dialects will be examined in the course. Prerequisite: THEA 317 or the consent of the instructor. (S)

**THEA 345. Drafting for the Theatre (Formerly THEA 245)****Credit 3(2-2)**

Students will receive intensive instruction in the techniques of theatrical drafting, in areas of scenery, lighting, and sound. Prerequisite: THEA 241 or the consent of the instructor. (F)

**THEA 346. Computer-Aided Design for Theatre (Formerly THEA 246)****Credit 3(2-2)**

This course will offer students techniques of computer-aided design and drafting. Attention will be given to scenic, lighting, and costume designs. Prerequisite: THEA 345 or the consent of the instructor. (S)

**THEA 360. Introduction to Drama and Theatre (Formerly Theatre 260)****Credit 3(3-0)**

This is an introduction to the study of drama and theatre, including playwriting, directing, acting, design, and technical theatre. No experience in dramatic production is required. There will be lecture discussions, performances, demonstrations, films, tapes and guest appearances. (F;S)

**THEA 401. Theatre Production Lab (Formerly THEA 300)****Credit 1(0-2)**

Students will work in various capacities for productions, including scenery, sound, special effects, property, lighting, costume, publicity, house, and/or makeup. Must be repeated for a maximum of three (3) credit hours. (F;S)

**THEA 415. Acting III (Formerly THEA 311)****Credit 3(3-0)**

Students will gain experience in the application of the Stanislavski techniques to define and fulfill the actor's work in terms of form and content as required by the play and its performance. Examination of the special demands of auditioning and cold readings; development of portfolios and actor's prompt script books are required. Course fee required. Prerequisite: THEA 212. (F)

**THEA 416. Acting IV (Formerly THEA 312)****Credit 3(3-0)**

Students will learn creating and sustaining character and action in texts since 1900. Emphasis will be on organic interrelation of acting, speech, and movement in scene study. Actor explores deeply the demands made by form and content of each script. Prerequisite: THEA 415. (S)

**THEA 422. Directing I (Formerly THEA 321) Credit 3(3-0)**

This course is a practical beginning study of theories, practices, and techniques of play direction. Attention is given to the principles of analysis and research of casting and rehearsing. Exercises, lectures, and demonstrations will be used. Final project will be a scene or one-act play. (F)

**THEA 431. Advanced Play Production (Formerly THEA 331) Credit 3(3-1)**

Students will study specific theoretical and practical work in the methods of play production, along with detailed script analysis. Work on crew required. Prerequisite: THEA 231 (S)

**THEA 445. Stage Lighting (Formerly THEA 342) Credit 3(3-1)**

This is a beginning course in stage lighting that emphasizes the practical aspects of electricity, optics, color, psychology of light, position, control, distribution, and timing. Working on crews is required. (S)

**THEA 456. Makeup for the Performing Arts (Formerly THEA 356) Credit 2(0-4)**

The student will receive intensive study in the fundamental principles and practices of makeup for stage and media. This course provides drawing and face-painting skills, as well as, practices in the uses of cosmetics, wigs, and hairpieces. The student will work with departmental productions. (S)

**THEA 464. History of the Theatre I (Formerly THEA 361) Credit 3(3-0)**

This course examines the interrelatedness of theatre's technical, dramatic, and theoretical aspects in the development of the art form from its origins in the dance and ritual of preliterate cultures to the neoclassic France. (F)

**THEA 465. History of the Theatre II (Formerly THEA 362) Credit 3(3-0)**

This course is a continuation of Theatre History I. Studies will be the development of technical, dramatic, and theoretical aspects of modern theatre from German Romanticism to the present. Periodic examinations and papers are required. Additionally, each student will research the intellectual, cultural and social background of a particular play or performance style and will apply that research in a performance project. (S)

**THEA 466. Playwriting (Formerly THEA 363) Credit 3(3-0)**

This course studies the process of creating a play, including plot development, structure, characterization, and dialogue. Students will write a one-act play, which will receive a stage reading at the end of the course. (S)

**THEA 467. African American Drama I (Formerly THEA 364) Credit 3(3-0)**

This course will study the history and criticism of African American drama and theatre from William A. Brown in 1821 to Lorraine Hansberry. The schools, periods, classes, subclasses, and types of drama will be analyzed. (F)

**THEA 468. African American Drama II (Formerly THEA 365) Credit 3(3-0)**

This is a continuation of African American Drama I. Course will study the history and criticism of African American drama and theatre from Lorraine Hansberry to the present. The schools, periods, classes, subclasses, and types of drama will be analyzed. (S)

**THEA 469. Modern American Drama (Formerly THEA 366) Credit 3(3-0)**

This is the study of the major currents in dramatic writing since 1900 in the U.S. as they reflect changes in society, audience, and literary form.

**THEA 511. Acting Styles (Formerly THEA 411) Credit 3(3-0)**

The student will have a review of historic theatrical styles, including Greek, Shakespeare, Restoration, comedy of manners, and modern. Class projects will focus on work in two styles, one classical, the other contemporary. Movement, voice, and speech, integrated directly with



acting concerns in studio instruction and coaching, will be emphasized. Final acting project is required. Prerequisite: THEA 416. (F)

**THEA 512. Acting Projects (Formerly THEA 412) Credit 3(3-0)**

The student will prepare and perform an individual role of some length and complexity. Individual problems of actors will be emphasized, along with detailed critiques of roles. Prerequisite: THEA 511. (S)

**THEA 513. Acting for the Camera (Formerly THEA 413) Credit 3(1-4)**

This course will provide practical experience in camera techniques for actors, utilizing commercial, film, and television scripts. Students will work directly with agents and casting directors, allowing them the necessary exposure to marketing the actor for work in the film industry. Prerequisite: THEA 416. (S)

**THEA 521. Directing II (Formerly THEA 421) Credit 3(3-0)**

The student will study the development of an approach to conceiving a theatre production, including the definition of people, situations, ideas, and action-flow inherent in a script. Also studied will be the identification of form and structure from director's point of view, along with the fundamental considerations in physical staging. The final directing project is a full-length play. Prerequisites: THEA 422 and 584. (S)

**THEA 542. Sound Design for the Theatre (Formerly THEA 442) Credit 3(2-2)**

This course is an in-depth study of uses of mixing boards, amplifiers, microphones, and recording devices for the Performing Arts. Prerequisite: THEA 241 or consent of the instructor. (S)

**THEA 543. Scene Design (Formerly THEA 443) Credit 3(3-0)**

The student will study the fundamentals of set design theory; basic mechanical and conceptual solutions for a variety of theatre spaces; and the development of presentational and research skills. (S)

**THEA 550. History of Costume and Décor (Formerly THEA 450) Credit 3(3-0)**

This course will examine the styles of costuming, architecture, furnishing, and ornamentation. Students will be exposed to highlights from ancient Egyptian to the present, with emphases on research and development. Prerequisite: THEA 241 or consent of the instructor. (F)

**THEA 552. Costume Design (Formerly THEA 452) Credit 3(2-2)**

This course will introduce students to the fundamentals of watercolor, chalk, ink, and charcoal mediums; also studied will be costume design and an extensive range of visual, written, and verbal techniques that comprise play analysis and the design-team collaboration. Prerequisite: THEA 550 (F)

**THEA 553. Advanced Costume Design (Formerly THEA 453) Credit 3(2-2)**

This course is for advanced costume-design students. It emphasizes multi-character and highly complex methods and technologies. There will be continual development of script analyses, styles, research techniques, and rendering skills. Prerequisite: THEA 552 (S)

**THEA 561. Creative Dramatics (Formerly THEA 461) Credit 3(3-0)**

Students will have an introduction to creative drama through improvisational theatre techniques. Emphasis will be on movement, voice, ensemble, and teaching strategies. Students will learn to use these activities in schools and community centers and with elderly and special-needs populations.



**THEA 562. Children's Theatre (Formerly THEA 462)** **Credit 3(3-0)**  
 Various techniques used in producing children's theatre with adult actors in school and community settings will be studied. Experience in design, lighting, costuming, acting, and promotion will be gained. Class work and participation in A Children's Theatre Production are required.

**THEA 563. Theatre Projects (Formerly THEA 463)** **Credit 3(3-0)**  
 This course is for advanced individuals interested in specialized, concentrated research or production project. Project will be selected by students in collaboration with the instructor. Comprehensive exam is to be taken. Thesis is to be written or project presented. (F)

**THEA 571. Theatre Internship (Formerly THEA 471)** **Credit 3(0-6)**  
 This course is designed to provide the student with a collaborative field experience in the profession. These experiences might or might not be salaried positions in a professional theatre or arts administration company. The student must be a participating performer, manager, or designer/technician. May be repeated for credit.

**THEA 572. Independent Study (Formerly THEA 472)** **Credit 3(3-0)**  
 This course provides opportunities for the individual student to study in a specific area of theatrical production. Establishment of an independent study requires approval of the student's advisor and the study-supervisor prior to registration. May be repeated for credit. (F;S;SS)

**THEA 584. Stage Management (Formerly THEA 484)** **Credit 3(2-2)**  
 This is the study of the functions and responsibilities of stage managing, including the development of prompt scripts, union (or company) rules, handling of auditions and rehearsals, and the calling of the productions. (S)

**THEA 585. Theatre Management (Formerly THEA 485)** **Credit 3(3-0)**  
 This is a study of theatre organizing and producing. This course will emphasize the analysis of the principles and methods of finances, box office, promotion, and house management. (F)

## DIRECTORY OF FACULTY

**Frankie Day Greenlee** ..... Associate Professor and Program Chairperson  
 B.A., South Carolina State College; M.F.A., Southern Illinois University

**Susan Latham** ..... Assistant Professor  
 A.A.S., AS., Illinois Valley College; B.F.A., M.F.A., Western Illinois University

**Miller Lucky, Jr.** ..... Associate Professor and  
 Executive Director of The Paul Robeson Theatre  
 B.F.A., North Carolins A&T State University; M.F.A., University of Florida (Gainesville)

**Jeffrey Richardson** ..... Associate Professor  
 B.A. Morgan State University; M.F.A., Purdue University

**Vanita V. Vactor** ..... Associate Professor  
 B.A., Hiram College; M.A., Western Illinois University; Ph.D., New York University

**Steve Willis** ..... Adjunct Professor  
 B.A., Averett College; M.F.A. University of North Carolina at Greensboro

## **Visual Arts Program**

<http://www.ncat.edu/~art/>

**LeAnder Canady, Program Chairperson**

### **OBJECTIVES**

The objectives of the Visual Arts Program are as follows:

1. to provide through studio activities, a strong foundation in traditional and contemporary visual arts media, media processes, and media production;
2. to provide an understanding of art history and contemporary issues of the visual arts;
3. to maintain a course of study that effectively provides instruction in pedagogical methods and procedures, knowledge in the selection, preparation, and organization of teaching materials for students who seek certification as public school teachers in the visual arts;
4. to encourage growth as a professional artist through studio production and critiques, student participation in competitive visual arts exhibitions, and through periodic review of portfolio development;
5. to provide a gallery for promoting increased awareness of the African-American's contributions to the visual arts and American culture, to foster a forum for the presentation, preservation, and exhibition of visual arts media, and to sponsor visual arts activities that provide opportunities for appreciation and cultural enlightenment in the University and surrounding communities.
6. to provide direct access to visual arts technology through continued development and maintenance of a specialized computer laboratory with graphics stations and, thus, to provide alternatives to studies in traditional media with courses in computer-aided design, desk top publishing, and interactive media production.

### **DEGREES OFFERED**

Visual Arts, Design – Bachelor of Arts

Visual Arts, Art Education – Bachelor of Science

### **GENERAL PROGRAM REQUIREMENTS**

To be admitted to an undergraduate degree program in the Visual Arts Program, the student must first meet all admissions requirements of the University.

### **DEPARTMENT REQUIREMENTS**

Students who elect to major in Visual Arts or Art Education are required to complete a minimum of 124 semester hours to meet graduation requirements. In addition to passing the core requirements of the University, a minimum grade of "C" is required performance in all art studio and art lecture classes.

The Visual Arts Program requires students who elect a visual arts major to have a desire to develop skills necessary for achieving as artists. It is recommended that students have taken high school courses in art or have had other art instruction. The visual arts major consists of courses from foundation to advanced levels in art media and techniques. Majors are expected to begin developing their portfolios as freshmen and to have accumulated a substantial body of work by their senior year.

Students are expected to demonstrate growth and development consistent with courses taken in drawing, painting, design and aesthetics as they work towards graduating from the visual arts program.

Students should be prepared to spend from \$75 to \$150 or more per year on supplies and materials for studio art classes.

## DEGREE REQUIREMENTS

### Visual Arts – Design Major

Students interested in the Design major will take studio courses in drawing, design, color theory, computer graphic design, painting and art history. The design degree requires 124 semester credit hours, 30 of which must be taken at the 200 level or above, with a grade average of “C” or above.

### Art Education Major

Students who aspire to become teachers must enroll in the Art Education degree program. This program prepares prospective teachers for certified careers in a highly competitive field. Students will take courses in art appreciation, art history, and studio courses in painting, drawing, ceramics, and computer graphic design. The teaching major requires 124 semester hours, 33 of which must be at the 200 level or above, with a grade average of “C” or above.

### REQUIRED MAJOR COURSES FOR VISUAL ARTS

ART 100	ART 459	ART 300
ART 222	ART 524	ART 401
ART 225	ART 526	ART 405
ART 227	ART 101	ART 454
ART 229	ART 224	ART 520
ART 400	ART 226	ART 525
ART 402	ART 228	ART 600
ART 406		

### CURRICULUM GUIDE FOR VISUAL ART, DESIGN

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 100	3	ART 101	3
ART 224	2	ART 225	2
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
PHED 200	2	Behavioral Science Elective	<u>3</u>
Behavioral Science Elective	<u>3</u>		14
	16		

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 226	3	ART 227	3
BIOL 100	4	ART 222	3
Behavioral Science Elective	3	ART 229	3
Humanities Elective	3	CHEM 100	3
Humanities Elective	3	CHEM 110	1
Free Elective	<u>2</u>	Humanities Elective	<u>3</u>
	18		16

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 400	2	ART 228	3
ART 300	3	ART 301	3
FOLA I	2	FOLA II	3
ART 401	3	GCS 133	1
Free Elective	3	GCS 133	2
Behavioral Science Elective	<u>3</u>	Humanities Elective	<u>3</u>
	16		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 520	2	ART 525	3
ART 524	3	ART 526	3
ART 405	3	ART 402	3
ART 459	3	Free Elective	3
ART 406	<u>3</u>	Free Elective	<u>3</u>
	14		15

Total Credit Hours: 124

## CURRICULUM GUIDE FOR VISUAL ART, ART EDUCATION

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 100	3	ART 101	3
ENGL 100	3	ENGL 101	3
HIST 100 or 204	3	HIST 101 or 205	3
MATH 101	3	MATH 102	3
PHED Elective	1	PHED 200	2
Second Major Elective	<u>3</u>	Second Major Elective	<u>3</u>
	16		17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 226	3	ART 227	3
ART 224	2	ART 225	2
CUIN 300	2	CUIN 301	2
FOLA I	3	FOLA II	3
ENGL 200	3	ENGL 201	3
PSYC 320	3	Free Elective	<u>2</u>
PHED Elective	<u>1</u>		15
	17		

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 400	2	ART 229	3
ART 405	3	ART 401	3
CHEM 100	1	BIOL 100	4
CHEM 110	3	CUIN 400	3
ART 600	3	SPCH 250	<u>3</u>
Second Major Elective	<u>3</u>		16
	15		



## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ART 520	2	CUIN 500	3
ART 524	3	CUIN 525	3
ART 459	2	CUIN 560	6
ART 454	3	CUIN 624	<u>3</u>
CUIN 436	<u>3</u>		15
	13		

Total Credit Hours: 124

## CAREER OPPORTUNITIES

Opportunities in the visual arts are more prolific and lucrative today than ever before for students. The visual arts world is experiencing rapid expansion in electronic imaging processes both for print production and the Internet. A new graphics language is in development and demands specialized technical training for today's graphic design artist. Our mission is to provide the program and training that enable graduates to meet the demand for new standards in visual arts communications. To this end the visual arts major provides a rigorous curriculum centered on student portfolio development demonstrating skills in both traditional and new media.

The Art Education Program offers students an opportunity to choose a career in the teaching profession and is accredited by the National Council for the Accreditation of Teacher Education (NCATE) and the State Department of Public Instruction (SDPI). The Art Education Program provides opportunities for Teacher Certification as well as Certification Renewal for Teachers working in the field. Because minority teachers are under-represented in the field of art education, our mission is to provide proper guidance and a quality curriculum that will not only prepare students to fill this void but also enable them to make lasting contributions to the field.

## SECOND MAJOR REQUIREMENTS

In accordance with State Department of Public Instruction guidelines, art education majors are required to complete a second major requirement that consists of at least nine hours selected from the following courses: ART 228, 406, 525, 526, and 529

## COURSE DESCRIPTIONS IN VISUAL ARTS

### Undergraduate

#### **ART 100. Basic Drawing and Composition Credit 3(0-6)**

This course is a study of the fundamental principles of drawing as a mode of visual expression. Selected problems involving basic consideration of line, form, space and composition are presented for analysis and laboratory practice. (F;S;SS)

#### **ART 101. Lettering and Poster Design Credit 3(0-6)**

This course is a comprehensive study of the art of lettering. Projects involving the principles of layout, poster construction, and general advertising are required. (DEMAND)

#### **ART 220. Graphic Presentation I Credit 2(0-4)**

Exercises in various sketching techniques and media, including work with pencil, charcoal, crayon, and ink are included. Individual instruction is given using forms in nature and still life for art and architectural presentation. Prerequisite: Sophomore standing. (DEMAND)

**ART 221. Graphic Presentation II****Credit 2(0-4)**

The theory of color mixture is studied. Individual instruction in the techniques of watercolor painting for architectural presentation and studies from nature and still life are included. Prerequisite: ART 220. (DEMAND)

**ART 222. Watercolor****Credit 3(0-6)**

This course includes experimental exploration of all aqueous media: watercolor, casein, gouache; their possibilities and limitations. (S)

**ART 224. Art Appreciation****Credit 2(2-0)**

This course is an introduction to the study of visual art. Basic qualities of various forms of artistic expression are explained. Emphasis is placed on the application of art principles in every day life. (F;S;SS)

**ART 225. An Introduction to the History of Art****Credit 2(2-0)**

This is a general introduction to the history of art, beginning with an examination of ancient art in terms of extant monuments and culminating with the analysis and comparison of representative works of today. (F;S)

**ART 226. Design I****Credit 3(0-6)**

This is an introduction to visual design based upon an analysis of the aims, elements, principles, sources of design and their application in a variety of media. (F;S)

**ART 227. Design II****Credit 3(0-6)**

This course is a continuation of Art 226 with consideration given to three dimensional as well as two-dimensional problems. Students are encouraged in the experimental use of materials and are required to find individual and complete solutions to problems through various stages of research, planning, and presentation. Emphasis is placed on technical perfection and the development of professional attitudes. (S)

**ART 228. Color Theory****Credit 3(0-6)**

Problems directed toward the understanding of color through creative experiment and application of color in visual organization are examined. Use of slides, filmstrips, and trips are included. (F;S;SS)

**ART 229. Anatomy and Figure Drawing****Credit 3(0-6)**

This course is a study of the human figure with emphasis on anatomy, body structure and proportions, draped figures at rest and in action. Special emphasis is given to detailed studies, composition, and stylization. (S)

**ART 300. Computer Graphics Design I****Credit 3(0-3)**

Computer programs used for graphic design will be taught with an emphasis on developing student skills in vector and raster graphics production. Students will complete a portfolio of projects and learn to use and troubleshoot the Macintosh operating system. Prerequisite: ART 226 or GCS 110. (F;S)

**ART 301. Computer Graphics Design II****Credit 3(0-3)**

This course is a continuation of skill development begun in art 300. Students will learn to enhance, alter, and composite photographic images and will produce a portfolio of original graphic designs. Prerequisite: ART 300. (F)

**ART 310. African-American Art****Credit 2(2-0)**

This course is a study of African-American art in Western art history from the colonial period to the present and its implications for today's art student. (F)

**ART 400. Renaissance Art****Credit 2(2-0)**

The study of the Renaissance in Italy and in major regions of northern and western Europe from 1300 to 1600 is included. (F;S)

- ART 401. Ceramics** **Credit 3(0-6)**  
 This course is an introduction to sculptural form with the use of clay modeling, basic plaster techniques, wood, and metal in relation to the production of sculpture. Sculpting, decorating, glazing, and firing are also included. Supplementary reading is required. (F;S)
- ART 402. Basic Sculpture** **Credit 3(0-6)**  
 This course is an introduction to sculptural form with the use of clay modeling, basic plaster techniques, wood, and metal in relation to the production of sculpture. (S)
- ART 405. Materials and Techniques** **Credit 3(0-6)**  
 This course is the study of the materials of the artist, supports, ground, vehicles, binders, and protective covering. Exploration of the possibilities of various techniques of picture construction as a point of departure for individual expression will also be included. (F)
- ART 406. Painting Techniques** **Credit 3(0-6)**  
 This course is a continuation of Art 405 with further work in projects that explore the esthetic opportunities and problems implicit in the use of varying media. Work in tempura, gouache, casein, polymers, and lacquers is required. (S)
- ART 450. Advertising Design** **Credit 3(0-6)**  
 The study of basic tools of advertising design is included. Students are introduced to lettering techniques, layout problems, and reproduction processes for advertising, illustrations, posters, and television. (S)
- ART 451. Advertising Design II** **Credit 3(0-6)**  
 This course includes preparation and rendering of art work for reproduction from rough idea layouts to finished illustration. Creative and technical class work is augmented by visits to commercial studios and printing companies. Prerequisite: ART 450. (DEMAND)
- ART 452. Commercial Art** **Credit 3(0-6)**  
 Illustration techniques are studied. Different materials and renderings employed in advertising illustration such as airbrush colored inks, scratchboard, etc. are also examined. Attention is given to techniques of printing is as far as they affect graphic design. (DEMAND)
- ART 453. Typography** **Credit 3(0-6)**  
 The study of typography in relation to lettering advertising, and design is included. Prerequisites: ART 101 and 450. (DEMAND)
- ART 454. General Crafts** **Credit 3(0-6)**  
 This course is an introduction to craft processes, weaving, metalwork, leather, etc. (S)
- ART 459. Baroque and Rococo Art** **Credit 2(2-0)**  
 The study of art in Europe from 1600 to 1800 is emphasized. (F)
- ART 520. Modern Art** **Credit 2(2-0)**  
 European and American Art from about 1875 to the present will be studied. (S)
- ART 524. Introduction to Graphic Arts** **Credit 3(0-6)**  
 This course is an introduction to printmaking processes. Production of prints in varied media: linoleum, woodcuts, dry point etchings, serigraphs, and lithographs will be studied. (F)
- ART 525. Lithography and Serigraphy** **Credit 3(0-6)**  
 This course explores the techniques of lithography and serigraphy as a means of contemporary artistic expression. Emphasis of medium is determined by individual interest. (S)
- ART 526. Senior Project** **Credit 3(0-6)**  
 Students who have given evidence of their ability to do serious individual work on a professional level may plan and carry out a project of their own choosing, subject to approval and supervision of a faculty member. (S)



**ART 528. Painting I****Credit 3(0-6)**

This course involves the creative painting in various media with emphasis on a modern approach and handling of medium. Research and experience in contemporary trends: abstracts, non-objective, and abstract expressionism will be required. (F)

**ART 529. Painting II****Credit 3(0-6)**

This course focuses on the development of the student as a professional artist; advance research and familiarization with contemporary trends, concepts, forms, and symbols. Emphasis is on an original contemporary statement. (S)

**Advanced Undergraduate Courses****ART 600. Public School Art****Credit 3(3-0)**

The course includes the study of materials, methods, and procedures in teaching art in public schools. Special emphasis is placed on selection and organization of materials, seasonal projects, lesson plan. (F;S;SS)

**ART 602. Seminar in Art History****Credit 3(3-0)**

This course includes in-depth investigation of the background influences which condition stylistic changes in art forms by analyzing and interpreting works of representative personalities. (S)

**ART 603. Studio Techniques****Credit 3(3-0)**

This course includes demonstrations that illustrate and emphasize the technical potentials of varied media. These techniques are analyzed and discussed as a point of departure for individual expression. (S)

**ART 604. Ceramic Workshop****Credit 2(0-2)**

This course is the study of advanced studio problems and projects in ceramics with emphasis on independent creative work. The student is given opportunity for original research and is encouraged to work toward the development of a personal style in the perfection of technique. (DEMAND)

**ART 605. Printmaking****Credit 3(3-0)**

The investigation of traditional and experimental methods in printmaking will be emphasized. Advanced studio problems in woodcut etching, lithography, and serigraphy will be studied. (DEMAND)

**ART 606. Sculpture****Credit 3(3-0)**

This course includes further study of sculpture with an expansion of techniques. Individual problems for advanced students. (DEMAND)

**ART 607. Project Seminar****Credit 2(0-4)**

This course includes advanced specialized studies in creative painting, design, and sculpture. By means of discussion and suggestions this seminar intends to solve various problems which might arise in each work. Prerequisite: Consent of the instructor. (DEMAND)

**ART 608. Arts and Crafts****Credit 3(3-0)**

Creative experimentation with a variety of materials tools and processes: projects in wood, metal, jewelry making wood and metal construction, fabric design, leather craft, puppet making, and paper sculpture. (DEMAND)



## DIRECTORY OF FACULTY

- Yuheng Bao** ..... **Associate Professor**  
B.A., Beijing Teachers College; M.A., The Academy of Arts of China; Ph.D., Ohio University
- James Barnhill** ..... **Visiting Assistant Professor**  
B.S., University of North Carolina at Chapel Hill; M.F.A., University of North Carolina at Greensboro
- William Brooks** ..... **Visiting Assistant Professor**  
B.S., North Carolina A&T State University; M.F.A., George Washington University
- Willie Hooker** ..... **Professor**  
B.S., Tennessee State University; M.A., Peabody-Vanderbilt University; Ed.D., Illinois State University
- LeAnder Canady** ..... **Associate Professor and Program Chairperson**  
B.S., North Carolina A&T State University; M.F.A., University of North Carolina at Greensboro
- Stephanie A. Santmyers** ..... **Associate Professor**  
B.F.A., Alfred University, M.S., Illinois State University; M.F.A., University of North Carolina at Greensboro

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## SCHOOL OF BUSINESS AND ECONOMICS

<http://www.ncat.edu/~business/>

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**Quiester Craig, Dean**

### MISSION

The mission of the School of Business and Economics at North Carolina Agricultural and Technical State University is to provide a high quality experience in management education in an academic environment that effectively recognizes, appreciates, and responds to the diverse backgrounds and abilities of students. The academic and related programs of the School are designed for the development and/or enhancement of communication, technological, analytical, team building, and other skills essential for graduates to competitively perform and advance in a changing and global society with a diverse work force. The School's primary emphasis on effective teaching and learning is fostered by the availability, continued improvement, and productivity of the faculty for instruction, advisement, research, and service to the University, community, and the professions.

### ACCREDITATION

The undergraduate accounting and business programs of the School of Business and Economics are accredited by the AACSB International – The Association to Advance Collegiate Schools of Business.

### DEGREES OFFERED

Accounting – Bachelor of Science  
Business Education – Bachelor of Science  
Economics – Bachelor of Science  
Finance – Bachelor of Science  
Management – Bachelor of Science  
Marketing – Bachelor of Science  
Transportation – Bachelor of Science  
Management – Master of Science

### COURSE LOAD

The normal course load is fifteen to seventeen (15-17) credit hours. A full-time undergraduate student is required to carry a minimum of twelve (12) credit hours. Students majoring in the School of Business and Economics may not enroll for more than eighteen (18) credit hours without the approval of the department chairperson and the dean.

### GENERAL PROGRAM REQUIREMENTS

The student is held responsible for the selection of courses in conformity with the curriculum of his/her choice. A student who enters the School of Business and Economics has the privilege of graduating under the provisions of the *Bulletin* current upon admission provided all requirements are completed within six years. If all requirements are not completed within six years after admission, the student is expected to conform to the *Bulletin* requirements specified for the class with which graduation is anticipated.

The applicant for graduation must have earned a minimum of 124 semester hours, excluding deficiency and/or remedial course work, with a cumulative grade point average of 2.00 or better for all courses taken. Students enrolled in repeatable semesters of University Band (**MUSI-300**) and/or Choir (**MUSI-301**) will receive graduation credit for one semester only. Students in the School of Business and Economics must earn a minimum grade of "C" in ENGL 100,

101; MATH 111, 112; and BUED 360. Students must also present a minimum cumulative grade point average of 2.00 in the 10 (30 hours) courses listed as major program requirements in the applicable University *Bulletin* for the selected courses of study.

Students are considered for a change of major to a program in the School of Business and Economics from other academic majors and undecided classification upon the completion of twenty-four (24) semester hours with a minimum grade point average of 2.25. The 24 semester hours must include ENGL 100 and 101; MATH 111 and 112 or equivalent. FRST 098, FRST 099, FRST 100, and MATH 100 are not considered for the 24 hour requirement. Math 131 and 132 may be substituted for Math 111 and Math 112; credit will be awarded for the higher level courses only. Exceptions to this policy require the recommendation of the department chairperson and the approval of the dean of the School of Business and Economics.

Students majoring in programs in the School of Business and Economics must enroll in 3 hours of humanities, social sciences, or free electives which satisfy the African-American studies core requirement of the University.

### **DOUBLE MAJOR**

Students who desire to obtain a double major within the School of Business and Economics must complete a minimum of twelve (12) semester hours beyond those required of the first major. As a general rule, major program courses in one major in the School of Business and Economics will not be accepted to meet major program elective course requirements in the second major.

### **APPROVAL FOR TRANSFER CREDIT**

Students enrolled in the School of Business and Economics must receive prior approval from the department chairperson and the dean of the School of Business and Economics for courses to be considered for transfer credit from other colleges and universities.

### **PROFICIENCY EXAMINATIONS**

Students who have had some training or experience in certain fields offered in the School of Business and Economics may be given an opportunity to take an examination with the permission of the chairperson of the department and the approval of the dean of the School of Business and Economics. A student who passes a proficiency examination is given credit toward graduation, provided that the course is acceptable for his/her curriculum. Credit is given only if a grade of "C" is made on the examination. A grade of "P" is recorded on the student's record. No official record is made of failures on these examinations.

Proficiency examinations are given under the following restrictions:

1. Examinations may be taken only by persons who are in residence at the University.
2. Examinations may not be taken to raise grades or remove failures in courses.
3. Examinations may be taken only once in the same course.

### **SENIOR RESIDENCE REQUIREMENT**

A student must complete a minimum of three semesters as a full-time student in residence at the University which include the two semesters prior to graduation. At least one half of the student's credit hours in the major field must be earned at the University. Exceptions to either of these provisions may be made upon the recommendation of the chairperson of the student's major department and the approval of the dean of the School of Business and Economics.

## **SCHOOL REQUIREMENTS**

All business programs require the completion of Business and Economics Core requirements including the following courses: ACCT 221, 222; BUED 360; BUAD 220, 341, 422, 430, 453, 461, 481, and 520.

### **BETA GAMMA SIGMA**

Beta Gamma Sigma is the international scholastic honor society for majors in programs in the School of Business and Economics. Membership in the Society represents the highest national recognition a student in business can receive in an undergraduate program accredited by the AACSB International – The Association to Advance Collegiate Schools of Business. Only outstanding students who rank in the upper 7 percent of the junior class or the upper 10 percent of the senior class are invited to membership. The North Carolina Agricultural and Technical State University Chapter was established in 1980 as a result of the accreditation of the undergraduate business programs in 1979.



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## **Department of Accounting**

<http://www.ncat.edu/~acctdept/>

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**Mark Kiel, Chairperson**

### **MISSION**

The mission of the Department of Accounting at North Carolina Agricultural and Technical State University is to provide a high quality learning experience in accounting education which effectively recognizes, appreciates, and responds to the abilities and backgrounds of a diverse student population. The academic and related programs of the Department are designed to provide students with the technical skills and ethical values required for a variety of accounting and business careers. These programs also provide opportunities for the development of the communications, analytical, and technological skills required for lifelong learning and competitive performance in a diverse and global economic environment. The Department's primary emphasis is teaching/learning with secondary and correlated emphases on research and service.

### **ACCREDITATION**

The undergraduate accounting program is accredited by the AACSB International – The Association to Advance Collegiate Schools of Business.

### **DEGREE OFFERED**

Accounting – Bachelor of Science

### **GENERAL PROGRAM REQUIREMENTS**

The major in Accounting must complete a minimum of 126 semester hours consistent with the curriculum guide presented below. Accounting majors must earn a minimum grade of “C” in ENGL 100, 101, MATH 111, 112 and BUED 360.

### **DEPARTMENTAL REQUIREMENTS**

Majors in the department must earn a minimum grade of “C” in the 10 (30 hours) courses listed as major program requirements for accounting in the applicable University *Bulletin*.

### **CAREER OPPORTUNITIES**

Students majoring in Accounting are prepared for careers in public and/or corporate accounting, business and government, and are provided with an appropriate background for graduate study.

### **REQUIRED MAJOR COURSES FOR ACCOUNTING**

ACCT 221	ACCT 443	ACCT 561
ACCT 222	ACCT 444	ACCT 562
ACCT 441	ACCT 545	BUAD 453
ACCT 442		

# CURRICULUM GUIDE FOR ACCOUNTING

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
POLI Elective <sup>1</sup>	3	Humanities Elective <sup>2</sup>	3
Humanities Elective <sup>2</sup>	3	Natural Science Elective <sup>3</sup>	3-4
Natural Science Elective <sup>3</sup>	3-4	BUAD 220	3
PHED Elective <sup>4</sup>	<u>1</u>	PHED Elective <sup>4</sup>	<u>1</u>
	17-18		17-18

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 305	3	ECON 310	3
BUAD 341	3	BUED 360	3
SPCH 250	3	BUED 342 or 334	3
Free Elective <sup>5</sup>	<u>2</u>	PSYCH 320	<u>3</u>
	17		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 441	3	ACCT 442	3
ACCT 444	3	ACCT 562	3
BUAD 422	3	BUAD 430	3
BUAD 453	3	Non-business Elective <sup>5</sup>	3
BUAD 481	<u>3</u>	Business Elective <sup>6</sup>	<u>3</u>
	15		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 443	3	ACCT 561	3
ACCT 545	3	Accounting Electives <sup>7</sup>	3
BUAD 461	3	BUAD 462 or 463 <sup>8</sup>	3
Non-business Electives <sup>5</sup>	<u>6</u>	BUAD 520	<u>3</u>
	15		12

Total Credit Hours: 126-128

\* Accounting majors must earn a minimum of a "C" in all 10 (30 hours) courses listed as major program requirements in the applicable University Bulletin for the selected area of study.

Students in the Department of Accounting satisfy the University Global Studies Requirement through the integration of Global Studies throughout the Accounting curriculum.

<sup>1</sup> Recommended Courses: POLI 200, 210, or 220 or POLI courses which satisfy the African-American core requirement of the University.

<sup>2</sup> Recommended Courses: Music 216, 217, 220, 221; FOLA; or humanities courses that satisfy the African-American core requirement of the University.

<sup>3</sup> Recommended Courses: BIOL 100; CHEM 100 and 110; PHYS 101; EASC 201.

<sup>4</sup> Recommended Courses: PHED 105, 107, 113, 114.

<sup>5</sup> Students must select non-business electives according to the criteria below:

(A) Students who did not satisfy African-American studies requirements through footnotes 1 or 2 must select one course (3 credit hours) of African-American studies. Recommended courses: POLI 220, MUSI 220, MUSI 221, HIST 311, COMM 302, or ENGL 333

(B) Students must select one course (3 credit hours) from the following: SPCH 351, SPCH 361, PHIL 262, or ENGL 300

(C) Remaining non business elective requirements may be satisfied by ECON 415 or any course offered outside of the School of Business and Economics. The following courses are recommended: ENGL 204, PHIL 260, HIST 205, PHED 107, 113, 114, ENGL 260, 300, 450, SPCH 116, 351, 461.

<sup>6</sup> Students should select one course from the following: BUAD 440; BUAD 550; BUAD 551; or ECON 415. Students planning to take the CPA Exam should select BUAD 550.

<sup>7</sup> Students should select from ACCT 445, 491, 563, 590 and 643. Students planning to take the CPA Exam should elect ACCT 590 and/or 643. ACCT 446 may not be used as an accounting elective by accounting majors.

<sup>8</sup> Students planning to take the CPA Exam should elect BUAD 463.

## **COURSE DESCRIPTIONS IN ACCOUNTING**

### **ACCT 203. Fundamentals of Accounting for Decision Making** **Credit 3(3-0)**

The course defines and identifies accounting information, why it is important, and how it is used by economic decision makers. The material is approached from the perspective of individuals who use accounting information to make decisions in the business world. Topical coverage includes basic accounting procedures; interpretation and analysis of financial statements; budgeting; and cost tracking and analysis. This course may not substitute for accounting or elective requirements for majors in the School of Business and Economics. Prerequisite: Sophomore standing.

**(F;S;SS)**

### **ACCT 221. Principles of Accounting I** **Credit 3(3-1)**

Introduction to the basic records and procedures used by service and merchandising organizations in accumulating financial data with emphasis on statement presentation. Includes discussion of special problems of income measurement and asset valuation. Prerequisites: BUAD 220 and sophomore standing. **(F;S;SS)**

### **ACCT 222. Principles of Accounting II** **Credit 3(3-1)**

Continuation of Principles of Accounting I. Emphasis on financial statement interpretation and the uses of accounting data by management for planning and control. Students are also introduced to the use of computers to maintain accounting records and to prepare financial statements. Prerequisite: Successful completion of ACCT 221. **(F;S;SS)**

### **ACCT 441. Intermediate Accounting I** **Credit 3(3-1)**

Rigorous study of the methodology and underlying theory of financial accounting. In-depth analysis of valuation alternatives and their effect on income measurement. Prerequisites: Successful completion of ACCT 222 and junior standing.

**(F;S;SS)**

### **ACCT 442. Intermediate Accounting II** **Credit 3(3-1)**

A continuation of Accounting 441. A study of accounting theory and techniques underlying the determination of contents and valuation of accounts for the financial statement of a going concern. Prerequisite: Successful completion of ACCT 441.

**(F;S;SS)**

### **ACCT 443. Income Tax Accounting** **Credit 3(3-1)**

Study of current principles and concepts of Federal Income Tax laws and related reporting requirements. Students will also study the tax structure and apply principles to selected accounting issues. Prerequisite: Junior standing or permission of instructor.

**(F;S;SS)**

### **ACCT 444. Cost Accounting** **Credit 3(3-1)**

Study of the principles and methodology of product and inventory cost determination and the effect on income measurement for manufacturing concerns, including job order and process costing under historical and standard cost systems. Special attention given to uses of accounting data as an aid in managerial planning and control. Prerequisites: Successful completion of ACCT 222 and junior standing. **(F;S;SS)**

### **ACCT 445. Selected Topics in Accounting** **Credit 3(3-1)**

Topics covered give additional consideration to selected accounting problems. Current accounting issues/problems and approaches to their resolution are examined. Governmental and not-for-profit topics are also considered. Prerequisites: Successful completion of ACCT 222 and junior standing. **(F)**

### **ACCT 446. Managerial Accounting** **Credit 3(3-0)**

Development of accounting concepts and techniques as aids to management planning and control including budgeting, cost behavior, cost-volume-profit analysis, and responsibility account-

ing for managerial decision making. Attention also given to the importance of ethics in the management account environment. Prerequisite: Successful completion of ACCT 222. (F;S;SS)

**ACCT 491. Fundamentals of Governmental & Not-for-Profit Accounting Credit 3(3-1)**

The course is designed for accounting majors and other students with an interest in governmental and not-for-profit accounting. The course introduces the student to concepts and methods of accounting for governmental and not-for-profit entities. Financial reporting, budgeting, and the environment in which these entities operate are also explored. Cases and other group assignments are used to foster the development of interpersonal, communication, and analytical skills. Prerequisites: ACCT 221, ACCT 222, and senior standing. (F)

**ACCT 545. Advanced Accounting Credit 3(3-1)**

Covers partnerships, consignments, special sales contracts, consolidations with related computer applications, governmental accounting and other selected advanced accounting topics. Prerequisite: Successful completion of ACCT 441. (F;S)

**ACCT 561. Auditing Principles Credit 3(3-1)**

Concentrates on the conceptual and practical aspects of the examination of financial statements by independent accountants within the framework of generally accepted accounting principles and generally accepted auditing standards. Appropriate attention is also given to the objectives and distinguishing characteristics of internal and operational auditing and to the importance and relevance of the Code of Professional Conduct. Prerequisite: Successful completion of ACCT 442. (F;S)

**ACCT 562. Accounting Systems Credit 3(3-1)**

Focuses on current techniques of processing and utilizing accounting data for information systems with emphasis on the computer for internal control and reporting. Recognition also given to the appropriate ethical considerations in the development and reporting of accounting information. Prerequisite: Successful completion of ACCT 441 or permission of instructor. (F;S)

**ACCT 563. Contemporary Cost Accounting Topics Credit 3 (3-0)**

The course covers contemporary issues/problems in cost and managerial accounting in the context of the modern business environment. Emphasis is given to cost information systems, analytical models, global aspects in management accounting, decision models, nontraditional accounting systems and other specialized cost topics. Case methodology and computer analysis are utilized. Prerequisites: Minimum Grade of "C" in ACCT 444. (S)

**ACCT 590. Seminar in Accounting Theory Credit 3(3-1)**

Focuses on the framework of ideas, concepts, and principles which make up the body of knowledge of accounting theory. Prerequisites: Successful completion of ACCT 442, senior standing, and permission of instructor. Not recommended for Audit. (S)

**ACCT 643. Advanced Income Tax Accounting Credit 3(3-1)**

Advanced treatment of tax rules, regulations, and application for individuals, partnerships, fiduciaries, and corporations. Students are also introduced to tax case research and the preparation of corporate tax returns utilizing the computer. Prerequisite: Successful completion of ACCT 443. Not recommended for Audit. (S)



## DIRECTORY OF FACULTY

- Ronald Campbell** ..... **Assistant Professor**  
 B.A., Oakwood College; M.B.A., Ohio State University; Ph.D., Texas A & M University; CPA
- William D. Cooper** ..... **Professor**  
 B.B.A., M.B.A., Georgia State University; Ph.D. University of Arkansas; CPA
- Quiester Craig** ..... **Professor and Dean**  
 B.A., Morehouse College; M.B.A., Atlanta University; Ph.D., University of Missouri at Columbia; CPA
- \*Lynn K. Griffin** ..... **Associate Professor**  
 B.S., West Chester State University; M.S., North Carolina State University; Ph.D., University of South Carolina at Columbia; CPA
- Gwendolyn Highsmith-Quick** ..... **Associate Professor**  
 B.S., North Carolina A&T State University; M.B.A., University of Wisconsin at Madison; Ph.D., University of Houston; CPA
- Mark Kiel** ..... **Associate Professor and Chairperson**  
 B.S., Alabama State University; M.B.A., Atlanta University; Ph.D., University of Georgia; CPA
- Charles Malone** ..... **Associate Professor**  
 A.B., Boston University College of Liberal Arts; J.D., Boston University School of Law; M.B.A., Columbia University Graduate School of Business; Ph.D., University of Missouri at Columbia; CPA
- R. David Mautz, Jr.** ..... **Associate Professor**  
 B.S., Oklahoma State University; M.Acc., Ph.D., University of Tennessee at Knoxville; CPA
- Gwendolyn McFadden-Wade** ..... **Associate Professor**  
 B.S., South Carolina State College; M. Acc., University of South Carolina; J. D., Stetson University College of Law; LL. M., University of Florida College of Law; CPA
- Janice Mereba** ..... **Assistant Professor**  
 B.B.A., University of Wisconsin; M.B.A., Auburn University; Ph.D., Pennsylvania State University
- Diana Robinson** ..... **Assistant Professor**  
 B.S., North Carolina A&T State University; M.B.A., Duke University; Ph.D., Oklahoma State University; CPA
- Jerry Thorne** ..... **Assistant Professor**  
 B.S., North Carolina A&T State University; M.B.A., University of Wisconsin at Madison; Ph.D., Texas A&M University; CPA

*\*On leave, 2003-2004*

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## Department of Business Administration

<http://www.ncat.edu/~buaddept/>

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**Paul G. Simmonds, Chairperson**

### OBJECTIVES

The objectives of the Business Administration Department are to provide fundamental knowledge concerning the field of business administration by emphasizing the tools essential for problem solving and decision-making and to develop competencies necessary for accomplishing managerial goals.

### DEGREES OFFERED

Finance – Bachelor of Science

Management – Bachelor of Science

Management (Management Information Systems) – Bachelor of Science

Marketing – Bachelor of Science

### CERTIFICATE IN ENTREPRENEURSHIP

The Department of Business Administration administers the Certificate in Entrepreneurship that offers a unique learning experience for students who aspire to start their own businesses or to secure employment with an entrepreneurial company. Course work provides theoretical, experiential, and practical information about starting, operating, and managing entrepreneurial firms. Students will explore the entrepreneurial career option, examine the entrepreneurial process from the idea stage through business operations to harvest, discuss corporate intrapreneurship, examine the skills-set needed for entrepreneurial success, and develop and present a business plan. Opportunity to apply the knowledge and skills is provided to students through the Entrepreneurial Internship Program.

The Certificate in Entrepreneurship is available to students in all university majors. The Certificate is awarded during Commencement. Interested students are required to complete 18 semester hours from the following:

Six (6) to nine (9) credit hours from BUAD 425, BUAD 460, and BUAD 499; six (6) to nine (9) credit hours of electives selected by each department; and 6 additional credit hours of business courses (BUAD 422 and BUAD 430) required for non-business majors.

### GENERAL PROGRAM REQUIREMENTS

Students majoring in programs in the Department of Business Administration must complete a minimum of 124 hours consistent with the curriculum guide for the area of study selected. Business Administration majors must earn a minimum grade of “C” in ENGL 100, 101, MATH 111, 112, BUAD 520 and BUED 360.

### DEPARTMENTAL REQUIREMENTS

Students in the Department of Business Administration must select a major program track in Finance, Management, or Marketing. **Students majoring in Management may elect a program concentration in Management Information Systems.** All students must earn a minimum grade of “C” in the 10 (30 hours) courses identified as major program requirements in the applicable University *Bulletin* for the selected major program track.

## CAREER OPPORTUNITIES

Students earning a degree in Finance, Management or Marketing will acquire the technical preparation and competencies for challenging management careers in public, private, and entrepreneurial activities and for competitiveness in prestigious graduate and professional programs.

### CURRICULUM GUIDE FOR BUSINESS ADMINISTRATION

The following courses provide a background and basic knowledge for business necessary before selecting a major program track:

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
Social Science Elective <sup>1</sup>	3	Social Science Elective <sup>1</sup>	3
Natural Science Elective <sup>2</sup>	3-4	Natural Science Elective <sup>2</sup>	3-4
MATH 111*	4	MATH 112*	4
BUAD 220	3	PHED Electives	3
	16-17		16-17

\* Students in the School of Business and Economics may use MATH 131 and 132 to satisfy MATH 111 and 112 providing that a grade of "C" or better is earned.

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 200	3	ECON 201	3
Humanities Elective <sup>3</sup>	3	Humanities Elective <sup>3</sup>	3
ECON 305	3	ECON 310	3
ACCT 221	3	ACCT 222	3
SPCH 250	3	BUAD 341	3
PSYC 320	3		15
	18		

<sup>1</sup> Recommended Courses: HIST 100, 101, 201, 202, 204, 205, 215, 216; 310, 311; POLI 200, 210, 220; SOCI 100.

<sup>2</sup> Recommended Courses: BIOL 100; CHEM 100 and 110; PHYS 101, 110; EASC 201 (formerly Plant Science 201) (Plant Science 110 CANNOT be used as a Natural Science elective in the School of Business and Economics.)

<sup>3</sup> Recommended Courses: ENGL 200, 201, 203, 333; MUSI 216, 220, 221; and other courses from Art, Music and/or Literature; Foreign Languages. MUSI 300 and 301 are not accepted as humanities electives.

### REQUIRED MAJOR COURSES FOR FINANCE

BUAD 453	BUAD 551	ACCT 441
BUAD 455	BUAD 553	ACCT 442
BUAD 462	BUAD 556	ECON 415
BUAD 550		

### CURRICULUM GUIDE FOR FINANCE

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 481	3	BUAD 482	3
BUAD 422	3	BUED 360	3
BUAD 453	3	BUAD 455	3
ACCT 441	3	ACCT 442	3
ECON 415	3	BUAD 550	3
	15		15

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 430	3	BUAD 462	3
BUAD 461	3	BUAD 520	3
BUAD 551	3	BUAD 556	3
BUAD 553	3	Finance Elective <sup>4</sup>	3
Non-business Elective	3	Non-business Elective	3
	15		15

Total Credit Hours: 125-127

<sup>4</sup> Select courses from the following: BUAD 440, 464, 465, and 552; ECON 410, 420, and 505, additional courses in Accounting or Computer Science (200 level or above) in consultation with advisor.

## REQUIRED MAJOR COURSES FOR MANAGEMENT

ACCT 446	BUAD 453	BUAD 522
BUAD 422	BUAD 481	BUAD 524
BUAD 426	BUAD 482	BUAD 526
BUAD 430		

## CURRICULUM GUIDE FOR MANAGEMENT

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 481	3	BUAD 482	3
BUAD 422	3	BUED 360	3
BUAD 453	3	BUAD 426	3
ECON 415	3	BUAD 430	3
ACCT 446	<u>3</u>	BUAD 526	<u>3</u>
	15		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 461	3	BUAD 462	3
BUAD 522	3	BUAD 520	3
BUAD 524	3	Management Elective <sup>5</sup>	3
Management Electives <sup>5</sup>	3	Non-business Electives	<u>6</u>
Non-business Elective	<u>3</u>		15
	15		

Total Credit Hours: 125-127

<sup>5</sup> Select six hours from the following: BUAD 425; 432; 440; 448; 537; or 599.

## REQUIRED MAJOR COURSES FOR MANAGEMENT (MIS CONCENTRATION)

ACCT 446	BUAD 481	BUAD 640
BUAD 422	BUAD 500	BUED 342
BUAD 448	BUAD 520	COMP 280
BUAD 449		

## CURRICULUM GUIDE FOR MANAGEMENT (MIS CONCENTRATION)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
Natural Science Elective <sup>1</sup>	3	Natural Science Elective <sup>1</sup>	3
Social Science Elective <sup>2</sup>	3	BUAD 220	3
Math 123	3	MATH 131	4
GEEN 102	2	GEEN 165	<u>4</u>
PHED Elective	<u>2</u>		17
	16		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 200	3	ECON 201	3
BUAD 341	3	BUED 342	3
ECON 305	3	ECON 310	3
ACCT 221	3	ACCT 222	3
MATH 132	<u>4</u>	SPCH 250	3
	16	PSYC 320	<u>3</u>
			18

<sup>1</sup> Recommended Courses: PHYS 101; EASC 201; PHYS 110 (co-requisite is Phys 111)

<sup>2</sup> Recommended Courses: HIST 100, 101, 201, 202, 204, 205, 215, 216

<sup>3</sup> Recommended Courses: PHED 105, 107, 113, 114, 115



## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 446	3	BUAD 422	3
BUAD 453	3	BUAD 448	3
COMP 280	3	BUED 360	3
BUAD 481	3	BUAD 482	3
Humanities Elective <sup>4</sup>	3	Humanities Elective <sup>4</sup>	3
Non-business Elective <sup>5</sup>	<u>1</u>	Non-business Elective <sup>5</sup>	<u>1</u>
	16		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 461	3	BUAD 640	3
BUAD 430	3	MIS Elective <sup>6</sup>	3
BUAD 449	3	BUAD 520	3
BUAD 500	3	BUAD 462	<u>3</u>
Non-business Elective <sup>5</sup>	<u>3</u>		12
	15		

Total credit hours: 126

<sup>4</sup> *Recommended Courses: ENGL 202, 203, 333; MUSI 220, 221; FOLA*

<sup>5</sup> *Recommended Courses: SPCH 116, 117; BUED 301; PHED 105, 107, 113, 114*

<sup>6</sup> *Recommended Courses: ACCT 562; MATH 223; BUED 400; COMP 363, 695; BUAD 620*

## REQUIRED MAJOR COURSES FOR MARKETING

ACCT 446	BUAD 438	BUAD 538
BUAD 422	BUAD 481	BUAD 639
BUAD 430	BUAD 537	ECON 310
BUAD 432		

## CURRICULUM GUIDE FOR MARKETING

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 481	3	BUAD 432	3
BUAD 430	3	BUAD 482	3
BUAD 422	3	BUAD 537	3
BUAD 453	3	BUED 360	3
ACCT 446	<u>3</u>	ECON 415	<u>3</u>
	15		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 438	3	BUAD 520	3
BUAD 461	3	BUAD 462	3
BUAD 538	3	BUAD 639	3
Marketing Elective <sup>6</sup>	3	Marketing Elective <sup>6</sup>	3
Non-business Elective	<u>3</u>	Non-business Elective	<u>3</u>
	15		15

Total Credit Hours: 125-127

<sup>6</sup> *Select six credit hours from the following: BUAD 425; 426; 433, 435; 440; 526; BUED 400; PSYC 420; or TRAN 440.*

## **COURSE DESCRIPTIONS IN BUSINESS ADMINISTRATION**

### **BUAD 220. Business Environment**

**Credit 3(3-0)**

The purpose of this course is to provide an understanding of the evolution of American business and an appreciation of the growing responsibilities facing both the company and its leaders. This course also covers business functions, the nature and problems of establishing a business enterprise, elementary mathematical problems and computer concepts for business. (F;S;SS)

### **BUAD 341. Introduction to Management Information Systems**

**Credit 3(3-0)**

This course is an introduction to Management Information Systems (MIS) and its uses and impact on organizations. Primary emphasis is on enhancement of managerial decision making through analysis, development, design, and management of information systems. This course also includes an introduction to business software. Prerequisite: Sophomore standing. (F;S;SS)

### **BUAD 422. Management Concepts**

**Credit 3(3-0)**

This course covers an analysis of the basic managerial processes at the administrative, staff, and operational levels of a firm with consideration given to business ethics and social responsibility in both domestic and international environments. Appropriate attention is given to the role of organization theory as it applies to achieving managerial objectives through available tools for obtaining desired results. Prerequisite: Junior standing. (F;S;SS)

### **BUAD 425. Entrepreneurship**

**Credit 3(3-0)**

This course examines the unique aspects of small businesses. Attention will be given to competitive strategy, regulatory environment, and sources of financing. The role of the small business within the macro economy is also explored. Prerequisite: Junior standing. (F;S)

### **BUAD 426. Organizational Behavior**

**Credit 3(3-0)**

Introduction of behavioral concepts of concern to management. Emphasis is placed upon the analysis of interpersonal relations, communication practices, and moral factors relative to their effect upon productivity, organizational effectiveness, and personnel systems. Prerequisite: BUAD 422. (F;S)

### **BUAD 430. Marketing Concepts**

**Credit 3(3-0)**

This course provides an introduction to marketing activities of organization and individuals. It focuses on formulating viable market objectives, assessing opportunities, evaluating ethical issues, and developing a marketing strategy. The course also emphasizes a global orientation and the development of problem solving skills. Prerequisite: Junior standing. (F;S;SS)

### **BUAD 432. Consumer Behavior**

**Credit 3(3-0)**

This course develops the knowledge of the behavioral content of marketing in consumer, industrial, and international fields. Examines the applicable theory, research findings, and concepts that are provided by psychology, sociology, anthropology, and marketing. The course stresses the conceptual models of buyer behavior based upon sources of influence: individual, group, cultural environment. Prerequisite: BUAD 430. (F;S;SS)

### **BUAD 433. Retailing**

**Credit 3(3-0)**

This course emphasizes retail store management. Attention is given to store location, layout, personnel, organization, buying, inventory, sales promotion, customer services and operating expenses. Prerequisite: BUAD 430. (F)

### **BUAD 435. Selling and Sales Management**

**Credit 3(3-0)**

This course focuses on the functions and skills surrounding the personal selling effort. The emphasis is on developing skills essential to persuasive communication in a buyer-seller context. The course also addresses topics such as sales recruiting, selecting, compensating, and evaluating sales personnel. Prerequisites: BUAD 430. (F;S)

**BUAD 438. Marketing Communications****Credit 3(3-0)**

This course acquaints students with the fundamentals of the marketing communications activities of the firm. All marketing mix variables are treated as marketing communications variables. Distinction is made between promotion and communications. Attention is also given to the usage of advertising communications appeals and marketing communications strategies in designing advertising and marketing communications programs. Prerequisite: BUAD 432. (F;S)

**BUAD 440. Business Information Systems****Credit 3(3-0)**

This course involves the evaluation of information systems. It includes: (1) problem recognition; (2) system analysis (feasibility study), which involves collecting, organizing, and evaluating facts about a system and the environment in which it operates; and (3) system design, in which a general outline of the proposed solution is used to produce a detailed design. Prerequisites: BUAD 341 or COMP 280, and junior status. (F;S)

**BUAD 448. Systems Analysis****Credit 3(3-0)**

This course focuses on the analysis, design, selection and construction phases of systems development, using the traditional life cycle techniques and rapid application development techniques. Such issues as the organizational structure of the Management Information Systems department and its relationship to other functional areas, productivity tools for systems analysis and design, and preparation for a career in MIS are discussed. Prerequisite: BUAD 341, BUED 342 or COMP 280. (F;S)

**BUAD 449. Advanced Programming for Business Systems****Credit 3(3-0)**

This course presents object oriented and procedural software engineering methodologies in data definition and measurement, abstract data type construction and use in developing screen editors, reports and other IS applications using data structures and indexed files. This course provides an understanding of algorithm development, programming, computer concepts and the design and application of data and file structures. Prerequisite: BUAD 448. (F)

**BUAD 453. Business Finance****Credit 3(3-0)**

This course is an introduction to the financial problems of business organizations, the finance function and its relationship to other decision-making areas in the firm, the concepts and techniques for planning and managing the acquisition and allocation of financial resources from the standpoint of internal management. Prerequisites: ACCT 222 and junior status. (F;S;SS)

**BUAD 455. Investments****Credit 3(3-0)**

This course analyzes the various types of corporate and public securities and examines the operation of securities markets. Prerequisite: BUAD 453. (F;S)

**BUAD 460. Special Topics in Entrepreneurship****Credit 3(3-0)**

Topics included in this course address selected issues in entrepreneurship, and will vary each semester. Minority entrepreneurship, corporate entrepreneurship, entrepreneurial finance, franchising, technology in small businesses, and critical success factors for new ventures are examples of some of the topical areas examined. Prerequisites: BUAD 425 or permission of instructor. (S;SS)

**BUAD 461. Legal Environment of Business****Credit 3(3-0)**

This course is an introduction to the legal system and environment in which business and the government operate and examines the creation of rights, liabilities, and regulations under the law as expressions of social and economic forces. Substantial coverage includes business organizations and society, administrative agencies, consumer protection, property ownership and contractual relations. Prerequisite: Junior standing. (F;S;SS)

**BUAD 462. Business Law****Credit 3(3-0)**

Using the background provided in Business Administration 461, topics related to the legal implications activity will be continued in this course. Coverage includes negotiable instruments,



sales of goods, security and debt, bankruptcy, commercial papers and government regulation. Prerequisites: BUAD 461 and senior standing. (F;S;SS)

### **BUAD 463. Commercial Law**

**Credit 3(3-0)**

In this course, the critical provisions of the Uniform Commercial Code will be examined in detail. Other topics will include anti-trust, security law, suretyship, professional liability, bulk transfers, and labor law. Prerequisites: BUAD 461 and senior standing. (S)

### **BUAD 464. Risk and Insurance**

**Credit 3(3-0)**

This course is an introduction to risk management with emphasis on varied applications of insurance as a technique for treating uncertainty. Prerequisite: Junior standing. (F)

### **BUAD 465. Real Estate**

**Credit 3(3-0)**

This course is a comprehensive introduction to real estate theory and practice. It is designed to enable the student to understand realty terminology and procedures. Topics include realty law, leases, types of realty ownership, income tax law, sales contracts, mortgages, estimating property value, negotiating, financing realty, closing procedures, closing costs, and deeds. This course provides background preparation for the real estate salesman's pre-licensing exam. Prerequisite: Junior standing. (F;S)

### **BUAD 466. Real Estate Finance**

**Credit 3(3-0)**

Overview of real property; decision-making emphasis. Topics include present value calculations, underwriting residential and income property loans, mortgage law, kinds of mortgages, mortgage markets, and types of lenders. Prerequisite: BUAD 465, BUAD 453, or instructor consent. (DEMAND)

### **BUAD 481. Management Science I**

**Credit 3(3-0)**

This course introduces the student to operations research. Basic concepts of management science will be covered, including selected quantitative models applicable to management decisions involving production, marketing, and finance functions. Coverage will also include analytical and theoretical techniques for production and job design, location and layout, scheduling, inventory, linear programming and network models. Prerequisites: Math 112 and ECON 305, and junior standing. (F;S;SS)

### **BUAD 482. Production Management**

**Credit 3(3-0)**

This course is a survey of the major production and operations functions of organizations using various productive systems. It stresses the identification of major problem areas associated with these functions (e.g., aggregate planning, scheduling, man-machine systems, inventory control) and the development of concepts and decision processes for achieving managerial solutions. It also emphasizes the application of modern quantitative techniques relevant to production management. Prerequisites: BUAD 481 and junior status. (F;S;SS)

### **BUAD 499. Internship in Entrepreneurship**

**Credit 3(3-0)**

This course provides experiential learning in entrepreneurship. Students work directly with entrepreneurs and participate in activities which give them a comprehensive understanding about owning and operating a business. Prerequisite: BUAD 425. (SS)

### **BUAD 500. Database Application Development**

**Credit 3(3-0)**

This course covers information systems design and implementation within a database management systems environment. Students will demonstrate their mastery of the design process acquired in earlier courses by designing and developing applications using database software to implement the logical design. Prerequisite: BUAD 448. (F)

### **BUAD 520. Strategic Management**

**Credit 3(3-0)**

This is an integrative course that focuses on strategic planning, policy formulation and corporate-wide decision making. The performance objectives of this course involve analysis of complex organizations to: (1) identify major problems and opportunities; (2) establish strategic ob-



jectives; and (3) recommend implementation of plans and programs. The case method is applied to reveal the nuances of organizational issues. Projects are assigned to develop critical thinking and communication skills. Prerequisites: BUAD 422, 430, and 453; ACCT 221 and 222; Senior status. (F;S;SS)

**BUAD 522. Human Resource Management**

**Credit 3(3-0)**

This course offers an introductory overview of human management functions, including the processes or systems that are designed to recruit, select, train, develop, motivate and retain a productive workforce. The emphasis is on management and utilization of people as organizational resources to achieve organizational objectives. The course covers relevant social, cultural, political, legal and global environment developments and provides the student with both general and specialized knowledge of the field and practice of human resource management in a variety of organizational settings. Prerequisites: BUAD 422 and advanced junior status. (F;S;SS)

**BUAD 524. Organizational Theory**

**Credit 3(3-0)**

This study of organizations examines the basic managerial concepts of systems, organizational contingencies, conflict, and technology. Emphasis is placed on design, authority, structure and effectiveness. The global environment and innovation are considered. Prerequisites: BUAD 422 and senior standing. (F;S;SS)

**BUAD 526. International Business Management**

**Credit 3(3-0)**

The course is comprehensive in nature and covers all international business. Appropriate consideration is given to current topics and/or concerns in international business. Case and area studies are utilized to make the course more practical than theoretical. Projects emphasizing major issues in international business are assigned and discussed. Prerequisite: Senior standing. (F;S)

**BUAD 537. International Marketing**

**Credit 3(3-0)**

This course examines the application of marketing, management, and research, with appropriate consideration given to institutional and environmental factors associated with international marketing. Case studies are used to enhance the study of international marketing concepts. Prerequisite: BUAD 430. (F;S)

**BUAD 538. Marketing Research**

**Credit 3(3-0)**

This course covers the types of research techniques used by businesses to coordinate marketing activities with consumer demand. Emphasis is placed upon survey, observational and experimental techniques used in marketing research. Prerequisites: ECON 310 and BUAD 430. (F;S)

**BUAD 550. Financial Analysis**

**Credit 3(3-0)**

The course focuses on short-term financial analysis processes and techniques for managing current assets and liabilities. It emphasizes both practical and theoretical approaches for making optional decisions and includes consideration of appropriate policies and procedures to ensure continuity in decision-making. Prerequisite: BUAD 453. (F;S;SS)

**BUAD 551. Financial Management**

**Credit 3(3-0)**

This course concentrates on decisions involving long-term financial commitments and survival of the firm, including capital budgeting policies and procedures, capital structure, long-term financing and cost of capital. Practical approaches and theoretical models are used to examine domestic and multinational finance. Prerequisite: BUAD 453. (F;S)

**BUAD 552. Commercial Bank Management**

**Credit 3(3-0)**

This course analyzes the operations of commercial banks, specifically, and other major financial institutions, generally. Emphasis is placed on management decision-making processes. Through case analysis and problems, the student is introduced to cash, loan, deposit, invest-

ment, and management problems faced daily by managers of financial institutions. Prerequisites: BUAD 453 and ECON 415. (S)

**BUAD 553. International Business Finance** **Credit 3(3-0)**

This course provides a survey of fundamental issues in managing the financial operations of an international business unit. Topics include working capital management, capital budgeting, financial markets and instruments, and capital structure decisions. These issues are discussed within a framework that examines enhanced risks associated with currency fluctuations, political and regulatory differences, economics structure variations, and cultural differences. Prerequisite: BUAD 453. (F)

**BUAD 555. Securities Analysis and Management** **Credit 3(3-0)**

This course extends the security analysis and portfolio management discussion introduced in the basic investments course, BUAD 455. This course of study should be especially valuable for students preparing for careers which involve (1) using or producing securities analyses and/or (2) managing securities portfolios, within financial institutions and treasury functions. Prerequisite: BUAD 455. (DEMAND)

**BUAD 556. Financial Markets** **Credit 3(3-0)**

This course stresses the allocation, accumulation, and liquidity adjustment functions of financial markets. Financial tools, such as flow and funds data, portfolio theory, theories of financial structure of interest rates, and security pricing (valuation) techniques, are integrated into the course. Prerequisites: BUAD 453 and ECON 415. (S)

**BUAD 557. Cases in Business Finance** **Credit 3(3-0)**

This is a senior level course designed for, but not restricted to, students who have strong career interests in corporate financial management. The course utilizes cases and readings oriented toward short-term financial management problems. The student is continuously placed in the position of the decision-maker who must support his judgments by identifying each problem succinctly, marshaling appropriate data, analyzing the data, and ultimately arguing for one of the alternatives. Prerequisites: BUAD 550 or 551 and senior standing. (DEMAND)

**BUAD 599. Independent Study in Business** **Credit 3(3-0)**

Today's dynamic environment requires students to acquire both general and specific education. This course is designed to provide students the opportunity to acquire in-depth knowledge in special topics or area studies where the University does not offer a specific course. Examples include ethical issues, global area studies, culture, research skills, entrepreneurship, etc. The course will be offered on an independent study basis with topics developed between the students and the supervising faculty. Prerequisites: Advanced junior or senior standing. (DEMAND)

**BUAD 610. Interdisciplinary Seminar in Transportation** **Credit 3(3-0)**

This is an interdisciplinary course on urbanism and transportation, and is designed to address current developments in urban transportation. Prerequisites: Advanced standing in business administration, business education, accounting, economics, political science, sociology, or architectural engineering, and BUAD 470. (DEMAND)

**BUAD 620. Telecommunications Systems Management** **Credit 3(3-0)**

This course provides in-depth knowledge of data communications and networking requirements, including telecommunications technologies, hardware, and software. Management of telecommunication networks, cost-benefit analysis, and evaluation of connectivity options are also covered. Students learn to evaluate, select and implement different communication options within a business. Prerequisites: COMP 280, BUAD 448, and senior or graduate standing. (S)

**BUAD 639. Marketing Management****Credit 3(3-0)**

This course provides an analysis of the fundamental and emerging issues that influence decisions involved in planning and managing marketing activities to create value for customers. It combines theory and application in teaching students how to make decisions about segmentation/targeting, product, price, distribution, promotion, the marketing environment and electronic commerce. Prerequisite: BUAD 438. (F;S;SS)

**BUAD 640. MIS Topics****Credit 3(3-0)**

This course focuses on emerging information technology topics such as advances in Internet security and privacy, data mining, data warehousing, and IT infrastructure. A project will be required. Prerequisites: BUAD 449 and BUAD 500, senior or graduate standing. (S)

**DIRECTORY OF FACULTY**

**Robert J. Angell** ..... **Professor**

B.S. B.A., University of North Carolina at Chapel Hill; M.B.A., University of Virginia; D.B.A., Florida State University

**Chiekwe Anyansi-Archibong** ..... **Professor**

B.S., M.B.A., Ph.D., University of Kansas

**Sylvia S. Black** ..... **Assistant Professor**

B.S., Howard University; M.S. University of North Carolina at Chapel Hill; M.B.A., University of Kansas; Ph.D., Columbia University

**Betty L. Brewer** ..... **Associate Professor**

B.S., East Carolina Univ., M.B.A., D.B.A., Kent State University

**James R. Brown, Jr.** ..... **Associate Professor**

B.S., M.S., University of Tennessee at Knoxville; Ed. D., University of Georgia

**William A. Carden** ..... **Assistant Professor**

B.A., University of South Alabama; M.B.A., Memphis State University; Ph.D., University of Memphis

**Kathryn E. Dobie** ..... **Associate Professor**

B.M., Wittenburg University; A.S., Dalton College; M.B.A., University of Central Arkansas; Ph.D., University of Memphis

**Roger J. Gagnon** ..... **Associate Professor**

B.S., Boston University; M.B.A., Clark University; Ph.D., University of Cincinnati

**Lawrence M. Glisson** ..... **Professor**

B.S., M.A., East Carolina University; M.B.A., Ph.D., The American University

**Rhonda L. Hensley** ..... **Assistant Professor**

B.S., M.B.A., James Madison University; Ph.D., Virginia Commonwealth University

**Robert L. Howard** ..... **Associate Professor**

B.A., Williams College; M.B.A., University of Chicago; Ph.D., Ohio State University

**Alice M. Johnson** ..... **Assistant Professor**

B.A., Winston-Salem State University; M.S., Winthrop University; Ph.D., University of Kentucky

**Olenda Johnson** ..... **Associate Professor**

B.S., M.B.A., Florida A&M University; Ph.D., University of Pittsburgh



- Wanda F. Lester** ..... Assistant Professor and Assistant Dean  
B.S., Florida A&M University; Ph.D., Florida State University; CPA
- Mary R. Lind** ..... Professor  
B.S., Duke University; M.B.A., Ph.D., University of North Carolina at Chapel Hill
- Thaddeus McEwen** ..... Associate Professor  
B.S., College of Arts, Science and Technology, Jamaica; M.S., Ph.D., Southern Illinois University at Carbondale
- Kimberly R. McNeil** ..... Assistant Professor  
B.S., North Carolina A&T State University; Ph.D., Florida State University
- Shona D. Morgan** ..... Assistant Professor  
B.S., Spelman College; M.S., Ph.D., North Carolina State University
- Japhet H. Nkonge** ..... Professor  
B.A., North Carolina A&T State University; M.B.A., Rutgers University; Ph.D., University of North Carolina at Chapel Hill
- Edna B. Ragins** ..... Associate Professor  
B.S., Hampton University; M.S., University of Wisconsin; Ph.D., Florida State University
- Alonzo Redmon** ..... Associate Professor  
B.S., University of Missouri at Columbia; M.B.A., Indiana University; Ph.D., University of North Carolina at Chapel Hill
- Patrick Rogers** ..... Associate Professor  
B.S.B.A., M.B.A., Western Carolina University; Ph.D., University of Tennessee at Knoxville
- Paul G. Simmonds** ..... Associate Professor and Chairperson  
B.S., George Washington University; M.B.A., Drexel University; Ph.D., Temple University
- Joanne M. Sulek** ..... Professor  
B.S., M.A., Wake Forest University; Ph.D., University of North Carolina at Chapel Hill
- George S. Swan** ..... Associate Professor  
B.A., Ohio State University; J.D., University of Notre Dame; LL. M., S.J.D., University of Toronto Faculty of Law
- Silvanus Udoka** ..... Associate Professor  
B.S., Weber State University; M.S., Ph.D., Oklahoma State University
- Isaiah O. Ugboro** ..... Professor  
B.S., Utah State University; M.B.A., Ph.D., University of North Texas
- Sharon D. White** ..... Assistant Professor  
B.A., University of Georgia; M.B.A., Ph.D., Florida State University
- Jacqueline Williams** ..... Assistant Professor  
B.S., Drexel University; M.B.A., University of Delaware; Ph.D., Florida State University



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## Department of Business Education

<http://www.ncat.edu/~bueddept/>

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**Beryl C. McEwen, Chairperson**

### OBJECTIVES

The objectives of the Department of Business Education are to provide quality instruction for the development of business teachers and to prepare students for managerial roles in computer technology, business, government, and the professions.

### DEGREE OFFERED

Business Education – Bachelor of Science

Business Education (Vocational Business Education) – Bachelor of Science

Business Education (Vocational Business Education - Data Processing) – Bachelor of Science

Business Education (Administrative Systems) – Bachelor of Science

**The Business Teacher Education Degree is now available online**

### GENERAL PROGRAM REQUIREMENTS

Students majoring in Business Education acquire the essential competencies that business education teachers need to function in an environment of changing technology. The Business Teacher Education program offers two concentrations: Vocational Business Education-Data Processing, and Vocational Business Education. The Vocational Business Education-Data Processing concentration emphasizes information systems and general business, and includes office technology, keyboarding, software, and programming skills. In addition to the skills already mentioned, the Vocational Business Education concentration requires shorthand. Both concentrations emphasize professional skills and techniques as well as teaching and learning methodologies applicable to Business Education and include directed work experience.

Business Teacher Education majors also complete courses for a second academic major. Options include economics, mathematics, marketing, computer technology, and English. The Administrative Systems concentration prepares students for administrative technology careers in business, government, and the professions. Students completing bachelor's degree programs in the Department of Business Education must complete 124-128 semester hours consistent with the curriculum guide of the program selected. Business Education majors must earn a minimum grade of "C" in ENGL 100, 101, ENGL 200, 201, MATH 111, 112, and BUED 360.

### DEPARTMENTAL REQUIREMENTS

Majors in the Department of Business Education must earn a minimum grade of "C" in the 10 (30 hours) courses identified as major program requirements in the applicable University *Bulletin* for the selected area of study.

The curriculum meets the certification requirements for the North Carolina Department of Public Instruction. The Business Education Department will be guided by the State's certification procedures in force.<sup>1</sup> Each student is required to pass the PRAXIS I (PPST) Test, the 16 Personality Factors Test, and an interview, for admission to the Teacher Education Program as well as pass the Specialty Area Test—PRAXIS II for initial certification. Check with your advisor or chairperson for details.

Business Teacher Education majors must meet the relevant admission, retention, and exit criteria for the Teacher Education Program. For more details, see “Teacher Education Program” and “Teacher Education Admission and Retention Standards, including Certification Procedures” sections in this *Bulletin*.

To be eligible for student teaching in Business Education, the student must have met the following requirements:

1. Attained Senior Standing
2. Completed three-fourths of the number of hours required in business and economics courses
3. Completed three-fourths of the number of hours required in his/her second major (concentration)
4. Attained an average of 2.8 or better in all work undertaken in the University, in all professional education courses undertaken, and in all courses undertaken in the subject matter major
5. Admitted to the Teacher Education Program
6. Passed the PRAXIS II (Specialty Area Test) in the content area

<sup>1</sup> As mandated by the State Department of Public Instruction, all candidates for teacher licensure will need to show evidence of computer competency beginning in the Spring of 1998. Students must produce an electronic portfolio showing advanced technology for teaching skills during their program of study. The University, through coursework, will provide opportunities for students to produce materials necessary to fulfill the technology portfolio requirement.

## ACCREDITATION

Business Teacher Education programs are accredited by the National Council for Accreditation of Teacher Education and approved by the State Department of Public Instruction.

## CAREER OPPORTUNITIES

Depending on the concentration selected, graduates of the Department of Business Education are prepared for career opportunities as business teachers in middle and secondary grades, and administrative computer specialists in business, industry, and the government.

## REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/Economics)

BUAD 341	BUED 360	ECON 410
BUAD 461	BUED 575	ECON 415
BUED 334	BUED 682	ECON 420
BUED 342		

## CURRICULUM GUIDE FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/Economics)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
Natural Science Electives <sup>1</sup>	4	Natural Science Electives <sup>2</sup>	3
PHED 200	2	ENGL 200	3
BUAD 220	3	BUED 302 <sup>3</sup>	2
	16	PHED Elective	1
			16

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 201	3	ACCT 222	3
ACCT 221	3	SPCH 250	3
ECON 200	3	CUIN 102	2
ECON 305	3	ECON 201	3
PSYC 320	3	ECON 310	3
BUED 334	<u>3</u>	BUAD 341	<u>3</u>
	18		17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 301	2	BUED 360	3
BUED 342	3	CUIN 400	3
ECON 410	3	ECON 420	3
BUAD 422	3	BUAD 430	3
BAUD 481	3	BUAD 453	3
Free Elective	3	BUED 671	<u>1</u>
BUED 670	<u>1</u>		16
	18		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 415	3	CUIN 500	3
BUAD 461	3	CUIN 560	6
BUAD 520	3	CUIN 624	<u>3</u>
BUED 575	3		12
BUED 682	<u>3</u>		
	15		

Total Credit Hours: 128

<sup>1</sup> Recommended Courses: BIOL 100, 140, 160; CHEM 101-111, CHEM 100-110

<sup>2</sup> Recommended courses: EASC 201; PHYS 101, 110-111

<sup>3</sup> Students who do not pass the Proficiency Test for Introduction to Keyboarding should enroll in BUED 301, the prerequisite for BUED 302.

## REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION

### (Vocational Business Education /Economics)

BUAD 341	BUED 360	ECON 410
BUAD 461	BUED 575	ECON 415
BUED 332	BUED 682	ECON 420
BUED 342		

## CURRICULUM GUIDE FOR BUSINESS EDUCATION

### (Vocational Business Education/Economics)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
Natural Science Elective <sup>1</sup>	3	Natural Science Elective <sup>2</sup>	3
PHED 200	2	ENGL 200	3
BUAD 220	3	BUED 302 <sup>3</sup>	2
PHED Elective	<u>1</u>	PHED Elective	<u>1</u>
	16		16

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 200	3	ACCT 222	3
ACCT 221	3	ECON 310	3
ENGL 201	3	ECON 201	3
SPCH 250	3	CUIN 102	2
ECON 305	3	BUED 332 <sup>4</sup>	3
BUED 334	<u>3</u>	BUAD 341	<u>3</u>
	18		17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 342	3	BUAD 453	3
BUAD 422	3	BUAD 430	3
CUIN 301	2	ECON 415	3
BUAD 481	3	CUIN 400	3
PSYC 320	3	BUED 360	3
ECON 410	<u>3</u>	BUED 671	<u>1</u>
	17		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 682	3	CUIN 500	3
ECON 420	3	CUIN 560	6
BUAD 461	3	CUIN 624	<u>3</u>
BUED 575	3		12
BUAD 520	3		
BUED 670	<u>1</u>		
	16		

Total Credit Hours 128

<sup>1</sup> Recommended Courses: BIOL 100, 140, 160; CHEM 104 and 110

<sup>2</sup> Recommended courses: EASC 201; PHYS 101, 110-111

<sup>3</sup> Students who do not pass the Proficiency Test for Introduction to Keyboarding should enroll in BUED 301, the prerequisite for BUED 302.

<sup>4</sup> Students who do not pass the proficiency test for Shorthand I should enroll in BUED 331, the prerequisite for BUED 332.

## REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing /Mathematics)

BUAD 422	BUED 360	MATH 242
BUAD 461	BUED 575	MATH 311
BUED 334	BUED 682	MATH 350
BUED 342		

## CURRICULUM GUIDE FOR BUSINESS EDUCATION

### (Vocational Business Education - Data Processing/Mathematics)

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 131	4	MATH 132	4
Natural Science Electives <sup>1</sup>	4	Natural Science Electives <sup>2</sup>	3
PHED 200	2	ENGL 200	3
PHED Elective	1	BUED 302 <sup>3</sup>	2
BUAD 220	<u>3</u>	CUIN 102	<u>2</u>
	17		17



## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 201	3	ACCT 222	3
ACCT 221	3	SPCH 250	3
ECON 200	3	PSYC 320	3
CUIN 301	2	ECON 201	3
MATH 231	4	MATH 311	3
BUED 334	<u>3</u>	BUAD 341	<u>3</u>
	18		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 305	3	CUIN 400	3
BUED 342	3	BUAD 453	3
BUED 360	3	MATH 242	3
BUAD 422	3	BUAD 461	3
BUAD 430	3	ECON 310	3
BUED 670	<u>1</u>	BUED 672	<u>0</u>
	16		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 350	3	CUIN 500	3
BUAD 481	3	CUIN 560	6
BUAD 520	3	CUIN 624	<u>3</u>
BUED 575	3		12
BUED 682	<u>3</u>		
	15		

Total Credit Hours: 128

<sup>1</sup> Physics 110-111; EASC 201; CHEM 100; PHYS 101; or BIOL 100.

<sup>2</sup> Students who do not pass the Proficiency Test for Introduction to Keyboarding should enroll in BUED 301, the prerequisite for BUED 302.

## REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/Computer Technology)

BUAD 341	BUED 342	BUED 568
BUAD 440	BUED 360	BUED 575
BUAD 461	BUED 447	BUED 682
BUED 334		

## CURRICULUM GUIDE FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/Computer Technology)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
Natural Science Electives <sup>1</sup>	4	Natural Science Elective <sup>2</sup>	3
PHED 200	2	PSYC 320	3
BUAD 220	<u>3</u>	BUED 302 <sup>3</sup>	2
	16	PHED Elective	<u>1</u>
			16

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ACCT 222	3
ACCT 221	3	ENGL 201	3
ECON 200	3	SPCH 250	3
ECON 305	3	ECON 201	3
CUIN 102	2	ECON 310	3
BUED 334	<u>3</u>	BUAD 341	<u>3</u>
	17		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 301	2	BUED 400	3
BUED 342	3	CUIN 400	3
BUAD 440	3	BUAD 453	3
BUAD 422	3	BUED 447	3
BUAD 481	3	BUAD 430	3
BUED 670	1	BUED 671	1
BUED 360	<u>3</u>		16
	18		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 568	3	CUIN 500	3
BUAD 461	3	CUIN 560	6
BUAD 520	3	CUIN 624	<u>3</u>
BUED 575	3		12
BUAD 682	<u>3</u>		
	15		

Total Credit Hours 128

<sup>1</sup> Recommended Courses: PHYS 110-111; EASC 201; CHEM 100; PHYS 101, or BIOL 100

<sup>2</sup> Recommended Courses: EASC 201; PHYS 101, 110-1

<sup>3</sup> Students who do not pass the Proficiency Test for Introduction to Keyboarding should enroll in BUED 301, the prerequisite for BUED 302.

## REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/Marketing)

BUAD 430	BUAD 461	BUED 360
BUAD 432	BUED 334	BUED 575
BUAD 435	BUED 342	BUED 682
BUAD 438		

## CURRICULUM GUIDE FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/Marketing)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
Natural Science Electives <sup>1</sup>	4	Natural Science Electives <sup>2</sup>	3
PHED 200	2	PSYC 320	3
BUAD 220	<u>3</u>	BUED 302 <sup>3</sup>	2
	16	PHED Elective	1
			16

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ACCT 222	3
ACCT 221	3	SPCH 250	3
ECON 200	3	ENGL 201	3
ECON 305	3	ECON 201	3
CUIN 102	2	ECON 310	3
BUED 334	<u>3</u>	BUAD 341	<u>3</u>
	17		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 301	2	BUAD 432	3
BUED 342	3	BUAD 435	3
BUAD 422	3	BUAD 425	3
BUAD 430	3	BUAD 453	3
BAUD 481	3	BUED 671	1
BUED 360	3	CUIN 400	<u>3</u>
BUED 670	<u>1</u>		16
	18		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 438	3	CUIN 500	3
BUAD 461	3	CUIN 560	6
BUAD 520	3	CUIN 624	<u>3</u>
BUED 575	3		12
BUED 682	<u>3</u>		
	15		

Total Credit Hours: 128

<sup>1</sup> Recommended Courses: BIOL 100, 140, 160; CHEM 101-111; CHEM 100-110

<sup>2</sup> Recommended courses: EASC 201; PHYS 101, PHYS 110-111

<sup>3</sup> Students who do not pass the Proficiency Test for Introduction to Keyboarding should enroll in BUED 301, the prerequisite for BUED 302.

## REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/English)

BUAD 341	BUED 360	CUIN 624
BUAD 422	BUED 575	ENGL 300
BUED 334	BUED 682	ENGL 460
BUED 342		

## CURRICULUM GUIDE FOR BUSINESS EDUCATION

### (Vocational Business Education-Data Processing/English)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
Natural Science Electives <sup>1</sup>	4	Natural Science Elective <sup>2</sup>	3
PHED 200	2	ENGL 102	2
BUAD 220	3	BUED 302 <sup>3</sup>	2
PHED Elective	<u>1</u>	CUIN 102	<u>2</u>
	17		16

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ACCT 222	3
ACCT 221	3	ENGL 201	3
ECON 200	3	PSYC 320	3
CUIN 301	2	ECON 201	3
SPCH 250	3	ENGL 210	3
BUED 334	<u>3</u>	BUAD 341	<u>3</u>
	17		18

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 305	3	ENGL 300	3
BUED 342	3	CUIN 400	3
BUED 360	3	BUAD 453	3
BUAD 422	3	BUAD 461	3
BUAD 430	3	ECON 310	3
BUED 670	<u>1</u>	BUED 671	<u>1</u>
	16		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 460	3	CUIN 500	3
BUAD 481	3	CUIN 560	6
BUAD 520	3	CUIN 624	<u>3</u>
BUED 575	3		12
BUED 682	<u>3</u>		
	15		

Total Credit Hours 127

<sup>1</sup> Recommended Courses: PHYS 110-111; EASC 201; CHEM 100; PHYS 101, or BIOL 100

<sup>2</sup> Recommended Courses: EASC 201; PHYS 101; PHYS 110-111

<sup>3</sup> Students who do not pass the Proficiency Test for Introduction to Keyboarding should enroll in BUED 301, the prerequisite for BUED 302.

## REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION

### (Administrative Systems)

ACCT 222	BUED 334	BUED 447
BUED 360	BUED 342	BUED 568
BUAD 440	BUED 400	BUED 624
BUAD 522		

## CURRICULUM GUIDE FOR BUSINESS EDUCATION

### (Administrative Systems)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
Natural Science Electives <sup>1</sup>	3-4	Natural Science Electives <sup>1</sup>	3
PHED Elective	1	BUED 302 <sup>3</sup>	2
BUAD 220	3	PHED Elective	1
Social Science Elective <sup>2</sup>	<u>3</u>	GEEN 102	<u>2</u>
	17-18		15

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>4</sup>	3	Humanities Elective <sup>4</sup>	3
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 305	3	ECON 310	3
SPCH 250	3	BUAD 341	<u>3</u>
BUED 334	<u>3</u>		15
	18		



## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PSYC 320	3	BUAD 430	3
BUED 342	3	SPCH 452	3
BUED 360	3	BUAD 422	3
BUAD 453	3	BUED 444	3
BUAD 426	3	BUED 447	3
BUED 670	<u>1</u>	BUED 671	<u>1</u>
	16		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 461	3	BUED 400	3
BUAD 440	3	BUAD 520	3
BUED 568	3	BUAD 481	3
BUAD 522	3	Free Elective (Non-business)	<u>3</u>
BUED 624	<u>3</u>		12
	15		

Total Credit Hours 124-125

<sup>1</sup> *Recommended Courses: EASC 201; PHYS 101; PHYS 110-111; BIOL 100; CHEM 100 -110*

<sup>2</sup> *Recommended courses HIST 100, 101, 215, 201, 202, 416, POLI 200, 210, 220, SOCI 100 and 204.*

<sup>3</sup> *Students who do not pass the Proficiency Test for Introduction to Keyboarding should enroll in BUED 301, the prerequisite for BUED 302.*

<sup>4</sup> *Recommended Courses: ENGL 200, 201, 202, 203, 333, MUSI 216, 220, 221; Other courses from Art, Music, Literature, and Foreign Languages.*

## COURSE DESCRIPTIONS IN BUSINESS EDUCATION

### **BUED 301. Introduction to Keyboarding**

**Credit 2(1-2)**

This course is designed to develop speed and accuracy in using keyboards. Emphasis is placed on using keyboarding software for formatting simple documents. Requirements for successful completion: 45 gross words per minute. (F;S;SS)

### **BUED 302. Information Processing Applications**

**Credit 2(1-2)**

This course is designed to enhance information processing skills through projects and simulations, including newsletters, policies and procedures manuals, and Web page development. Must be able to keyboard at 60 wpm. upon completion. *Note: To enroll in this course, students must either have passed BUED 301, and the relevant proficiency test, administered during the first week of each semester.* (F;S;SS)

### **BUED 331. Gregg Shorthand I**

**Credit 3(2-1)**

This course is the study of theory as outlined in *Gregg Shorthand Diamond Jubilee Series*. Minimum terminal requirement: 70 wpm on practiced matter. Prerequisite: BUED 302. (DEMAND)

### **BUED 332. Gregg Shorthand II**

**Credit 3(2-1)**

In this course, emphasis is placed on reinforcing shorthand theory as outlined in *Gregg Shorthand Diamond Jubilee Series*, speed building, and production of mailable letters. Minimum terminal requirement: 80 wpm on new-matter dictation. Prerequisites: BUED 302 and 331. (DEMAND)

### **BUED 334. Microcomputer Usage in Business**

**Credit 3(2-1)**

This course examines the theory and application of microcomputers in business. Students can gain hands-on experience with microcomputers using commercially and non-commercially developed software as it relates to the business environment. Prerequisite: Sophomore standing. (F;S;SS)

**BUED 342. Business Programming****Credit 3(3-0)**

This course introduces the student to computer programming design and techniques for management decision-making. Emphasis will be placed on the computer as an aid to problem solving and report generation essential to an efficient and an effective management information system. Prerequisite: BUAD 341 or GEEN 102. (F;S;SS)

**BUED 360. Business Communications****Credit 3(3-0)**

The study of communication theory and its applications to business is the main focus of this course. Emphasis is placed on composing the basic forms of business communication, including correspondence and reports. Attention is also given to the ethical objectives of communicating in the managerial environment. Prerequisites: ENGL 101 and sophomore standing. (F;S;SS)

**BUED 379. Personal Finance****Credit 3(3-0)**

This course examines the problems faced by individuals in managing personal incomes and expenditures. Emphasis is also placed upon credit, budgeting, borrowing, saving, and insurance. Prerequisite: Sophomore standing. (S)

**BUED 400. Business Reports and Presentations****Credit 3(3-0)**

This is a one-semester course with emphasis on advanced applications of business and technical writing principles; short reports such as letter reports and memo reports; formal reports; proposals; and procedures manuals. Emphasis will be placed on research and formal writing skills and on oral presentation skills through presentation of various reports. Presentations will be enhanced by using graphics and word processing software for document preparation. Prerequisites: ENGL 100, 101, SPCH 250, BUED 360; or junior standing and approval of the chairperson. (S)

**BUED 444. Data Communications and Networks****Credit 3(3-0)**

This course emphasizes a formal approach to modern data communications and networks, including a theoretical and practical framework. It places special attention on enterprise and global systems covering voice, data, software, hardware, cellular/wireless, and bluetooth standards. Prerequisites: BUED 334 and BUAD 341; or approval of chairperson. (S)

**BUED 447. Advanced Microcomputer Applications****Credit 3(2-1)**

Emphasis in this course is on Windows-based graphical user interface and advanced computing concepts and applications related to information design, production, management, and dissemination in business. This course includes hands-on desktop publishing applications using integrated software packages. A capstone unit will deal with the future of the computing industry. Prerequisite: BUED 334 or approval of chairperson. (S)

**BUED 568. Organizational Information and Records Management****Credit 3(3-0)**

This course emphasizes the processing of organizational information at the systems level including records management, telecommunications, eCommerce, and global information management. Consideration is also given to the appraisal of current and future technological trends in business. Prerequisites: BUED 334, BUAD 341 or equivalent, and senior standing. (F)

**BUED 575. Methods of Teaching the Business Subjects****Credit 3(3-1)**

This course focuses on the selection, organization, and evaluation of supplementary teaching materials and analysis of techniques in teaching keyboarding, shorthand, transcription, related office skills, data processing, accounting, general business, business law, business structure, and elementary economics. The construction of teaching units, enrichment materials, and lesson plans for effective teaching at the secondary level will also be covered. Provisions are made for observation of and participation in business teaching. Prerequisites: CUIN 102-301, 400; PSYC 320; BUED 302, 334, and senior standing. (F;SS)

**BUED 624. E-Commerce Design and Implementation****Credit 3(3-0)**

This hands-on course will focus on the design and implementation of an e-business site on a live server. Emphasis will be given to effective design of Web pages, particularly the data collection forms such as the order and credit forms and how they interface with other business systems. A final project will require students to demonstrate the efficiency of their design to a panel of external evaluators. Prerequisites: BUED 444 and 447 or approval of the chairperson. (F)

**BUED 664. Occupational Exploration for Middle Grades****Credit 3(3-0)**

This course is designed for persons who teach or plan to teach middle grades occupational exploration programs. Emphasis is placed on occupational exploration in the curriculum, sources and uses of occupational information, approaches to middle grades teaching, and philosophy and concepts of occupational education. (DEMAND)

**BUED 665. Occupational Exploration in the Middle Grades-Business and Office Occupations****Credit 3(3-0)**

In this course, emphasis is placed on curriculum, methods and techniques of teaching and resources and facilities for teaching in the business and office occupations cluster including business and office, distribution and marketing, and communication and media. (DEMAND)

**BUED 670, 671. Directed Work Experience****Credit 1(0-1)**

This course includes observation and fieldwork in selected business firms to contribute practically to the total development of the student's educational experiences. A minimum of 100 hours must be completed each semester. Four hundred hours are required for Business Teacher Education majors. Students will receive "S" for "Satisfactory" or "U" for "Unsatisfactory" grades. Prerequisite: Junior standing. (F;S;SS)

**BUED 672. Directed Work Experience****Credit 0(0-0)**

This course includes observation and fieldwork in selected business firms to contribute practically to the total development of the student's educational experiences. A minimum of 100 hours must be completed each semester. Four hundred hours are required for Business Teacher Education majors. Students will receive "S" for "Satisfactory" or "U" for "Unsatisfactory" grades. Prerequisite: Junior standing. (F;S;SS)

**BUED 682. Administration and Supervision of Business and Office Education****Credit 3(3-0)**

This course will give students an understanding of the principles of effective administration and supervision of programs sponsored by federal vocational legislation and administered by state and local boards of education; functions of state plans; and study of (1) program standards, (2) administrative and supervision and evaluation, and (3) administrative and supervisory duties and problems (including inventories, equipment, co-curricular activities, public relations, departmental records, and staffing.) The role and responsibility of the coordinator of occupational educational systems and examination of pertinent research and procedures in job analyses will also be examined. Prerequisites: Senior standing and consultation with adviser. (F;SS)

## DIRECTORY OF FACULTY

- Lillie Anderton** ..... **Associate Professor**  
 B.A., Howard University; M.S., Ed.D., Virginia Polytechnic Institute and State University
- Frank W. Griffin** ..... **Assistant Professor**  
 B.A., University of North Carolina at Chapel Hill; M.A., North Carolina State University,  
 Ph.D., University of North Carolina at Greensboro
- Lisa E. Gueldenzoph** ..... **Assistant Professor**  
 B.S., Northern Michigan University; M.Ed., Ph.D., Bowling Green State University
- Ronda B. Henderson** ..... **Instructor**  
 B.S., North Carolina A&T State University; M.S., University of North Carolina at Greensboro
- Thelma M. King** ..... **Associate Professor**  
 B.S., North Carolina A&T State University; M.S., University of North Carolina at Greensboro;  
 Ph.D., Virginia Polytechnic Institute and State University
- Ewuukgem Lomo-David** ..... **Associate Professor**  
 B.S., Mankato State University; M.Ed., Ed.D., University of Memphis
- Beryl C. McEwen** ..... **Professor and Chairperson**  
 B.Ed., University of Technology, Jamaica; M.S., Ph.D., Southern Illinois University at  
 Carbondale
- Danielle Winchester** ..... **Instructor**  
 B.S., M.B.A., University of North Carolina at Greensboro



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## **Department of Economics and Transportation/Logistics**

<http://www.ncat.edu/~econdept/>

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**Basil Coley, Interim Chairperson**

### **OBJECTIVES**

The objectives of the Department of Economics and Transportation/Logistics are to develop the student's ability to understand and use economic principles and concepts to identify, analyze, and solve problems associated with the economy, and to develop potential for leadership positions in business, education, and the government.

### **DEGREES OFFERED**

Economics – Bachelor of Science

Transportation – Bachelor of Science

### **GENERAL PROGRAM REQUIREMENTS**

The following two program options are available to majors in Economics: (1) Business Economics and (2) General Economics. The Business Economics option includes the same core courses required of all Business Administration and Accounting majors in the School of Business and Economics. In the General Economics option, the student is allowed 24 hours of free electives in order to develop other areas of interest, such as computer science or the preparation for graduate study or law school.

Economics and Transportation majors are required to complete a minimum of 124 hours for a bachelor's degree consistent with the curriculum guide for the program selected. Also, a minimum grade of "C" must be earned in ENGL 100, ENGL 101, BUED 360, MATH 111, and MATH 112.

### **DEPARTMENTAL REQUIREMENTS**

Students majoring in Economics or Transportation/Logistics must earn a minimum grade of "C" in the 10 (30 hours) courses listed as major program requirements. Economics 200 and 201 are prerequisites to all courses in Economics.

### **CAREER OPPORTUNITIES**

The Economics major is prepared for careers in government services, business, and industry and provided with the educational background for graduate study and the study of law.

The Transportation major is prepared for careers in purchasing and materials management with railroads, motor lines, water carriers, airlines, other industries and the government.

### **REQUIRED MAJOR COURSES FOR ECONOMICS**

#### **(Business Economics)**

BUAD 341  
ECON 200  
ECON 201  
ECON 305

ECON 310  
ECON 410  
ECON 412

ECON 415  
ECON 420  
ECON 525

## CURRICULUM GUIDE FOR ECONOMICS

### (Business Economics)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111 <sup>1,2</sup>	4	MATH 112 <sup>2</sup>	4
Social Science Elective	3	Social Science Elective	3
Natural Science Elective	3-4	Natural Science Elective	4
PHED	1	BUAD 220	<u>3</u>
PHED 200	<u>2</u>		17
	16-17		

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 221	3	ACCT 222	3
SPCH 250	3	Humanities Elective	3
Humanities Elective	3	BUAD 341	3
PSYC 320	3	ECON 201	3
ECON 200	3	ECON 310	<u>3</u>
ECON 305	<u>3</u>		15
	18		

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 453	3	BUAD 481	3
FOLA Elective	3	FOLA Elective	3
BUAD 422	3	ECON 415	3
ECON 410	3	ECON 420	3
ECON 412	<u>3</u>	BUED 360	<u>3</u>
	15		15

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 430	3	BUAD 520	3
BUAD 461	3	ECON 525	3
Economics Elective	3	Economics Elective	3
Electives (non-business and non-economics)	<u>6</u>	Electives (non-business and non-economics)	<u>6</u>
	15		15

Total Credit Hours: 127

<sup>1</sup> Transfer students who have completed MATH 101 and 102 with a "C" or better may substitute those classes for MATH 111.

<sup>2</sup> It is recommended that students considering graduate school take MATH 131 and 132 in place of MATH 111 and 112.

## REQUIRED MAJOR COURSES FOR ECONOMICS

### (General Economics)

BUAD 341*	ECON 310	ECON 415
ECON 200	ECON 410	ECON 420
ECON 201	ECON 412	ECON 525
ECON 305		

\*MATH 240 may be substituted for BUAD 341

## CURRICULUM GUIDE FOR ECONOMICS

### (General Economics)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111 <sup>1</sup>	4	MATH 112 <sup>2</sup>	4
Social Science Elective	3	Social Science Elective	3
Natural Science Elective	4	Natural Science Elective	4
PHED	1	BUAD 220	3
PHED 200	<u>2</u>		17
	17		

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 305	3	ECON 310	3
Humanities Elective	3	BUAD 341 or MATH 240	3
ECON 200	3	Humanities Elective	3
PSYC 320	3	ECON 201	3
SPCH 250	<u>3</u>	Social Science Elective	<u>3</u>
	15		15

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FOLA Elective	3	FOLA Elective	3
ECON 410	3	ECON 420	3
ECON 412	3	ECON Elective	3
ECON Elective	3	ECON 415	3
Social Science or Math Elective	<u>3</u>	BUED 360	<u>3</u>
	15		15

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Electives <sup>3</sup>	12	Economics 525	3
Electives	<u>3</u>	Electives	<u>12</u>
	15		15

Total Credit Hours: 124

<sup>1</sup> Transfer students who have completed MATH 101 and 102 with a "C" or better may substitute those classes for MATH 111.

<sup>2</sup> It is recommended that students considering graduate school take MATH 131 and 132 in place of MATH 111 and 112.

<sup>3</sup> Fifteen semester hours should be taken from the following disciplines: Computer Science, Mathematics, Business Administration, Accounting, Political Science, Agricultural Economics, Sociology, Anthropology, English or Education in consultation with adviser.

### REQUIRED MAJOR COURSES FOR TRANSPORTATION

BUAD 481	TRAN 360	TRAN 580
BUAD 482	TRAN 431	TRAN 670
ECON 425	TRAN 450	TRAN 672
TRAN 340		

## CURRICULUM GUIDE FOR TRANSPORTATION

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
Social Science Elective <sup>1</sup>	3	Social Science Elective	3
Natural Science Elective <sup>2</sup>	3-4	Natural Science Elective	3-4
BUAD 220	3	PSYC 320	3
PHED Elective	<u>1</u>	PHED Elective	<u>1</u>
	17-18		17-18

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECON 200	3	ECON 201	3
BUAD 341	3	BUED 360	3
TRAN 340	3	ACCT 222	3
SPCH 250	3	ECON 310	3
ACCT 221	3	TRAN 360	<u>3</u>
ECON 305	<u>3</u>		15
	18		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 422	3	BUAD 482	3
Humanities Elective <sup>3</sup>	3	BUAD 453	3
BUED 400	3	TRAN 431	3
BUAD 481	3	Humanities Elective <sup>3</sup>	3
ECON 425	<u>3</u>	BUAD 430	<u>3</u>
	15		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
TRAN 670	3	TRAN 672	3
BUAD 461	3	BUAD 520	3
TRAN 450	3	Electives	3
Electives	3	TRAN 660	<u>3</u>
TRAN Elective	<u>3</u>		12
	15		

Total Credit Hours: 124-126

<sup>1</sup> Recommended courses: *PHYS 101; EASC 201; CHEM 100 (co-requisite is CHEM 110-Physical Science Lab); BIOL 100; BIOL 160.*

<sup>2</sup> Recommended courses: *HIST 100, 101, 201, 202, 215; GEOG 200, 322; SOCI 100, 200, 314.*

<sup>3</sup> Recommended courses: *ENGL 200, 201, 333; MUSI 220, 221; Foreign Languages or other courses from Philosophy, Art, or Music*

## TRANSPORTATION ELECTIVES:

(One elective must be completed from the courses listed below.)

BUAD 440	3	Business Information Systems
TRAN 470	3	Urban Transportation Concepts
TRAN 598	3	Independent Study
TRAN 600	3	Selected Topics in Transportation
TRAN 665	<u>3</u>	Transportation Regulation and National Policy
	15	

## UPS ENDOWED CHAIR

The UPS Endowed Chair was established to provide faculty support for curriculum and student development and to enhance research and other scholarly activities in transportation.

## TRANSPORTATION MINOR

The Department of Economics administers a Transportation minor that provides an understanding of urban and rural transportation planning with a special emphasis on public transport. In this minor, students are prepared for careers in transportation agencies of federal, state, county and city governments or in related private industries. Any major within the University may complete the requirements of this minor.



Students interested in the Transportation minor must successfully complete 18 semester hours from the following courses: BUAD 470, ECON 425; Twelve (12) hours of electives from POLI 448; MEEN 461 and 462; ARCH 566 and 567; ELEN 660; BUAD 610.

## **TRANSPORTATION INSTITUTE**

The Transportation Institute draws faculty, staff members and students from a number of different departments to create an interdisciplinary unit that conducts research, public service and training programs in the field of transportation. It also serves as a resource for planners, social scientists, public officials, and community groups to help them solve transportation problems.

The research program covers a wide range of areas, from investigating transportation needs of the poor to analyzing transportation financing. The Institute has achieved a national reputation for its funded research in small city and rural transportation.

Students play an important role in each of the research projects. Under the guidance of the faculty, student research assistants help to develop and conduct funded projects awarded to the Transportation Institute. The Institute makes substantial financial awards to students who are awarded research assistantships.

The Institute is a regional center that offers seminars, workshops, and short courses designed to provide instruction in current techniques and transportation concepts. These programs are designed for individuals outside the University who have an interest in transportation. In addition, they may use the extensive resource collection on transportation that is housed in the Transportation Institute's facilities, located in Merrick Hall.

## **COURSE DESCRIPTIONS IN ECONOMICS AND TRANSPORTATION**

### **ECON 200. Principles of Economics (Micro) Credit 3(3-0)**

This course is an introduction to the principles of economics as they relate to individual segments of the society. Emphasis will be placed upon scarcity, supply and demand, consumer behavior, business firms and market structures.

**(F;S;SS)**

### **ECON 201. Principles of Economics (Macro) Credit 3(3-0)**

This course introduces the student to the principles of economics as they apply to the economy as a whole. National income determination, inflation, unemployment, monetary and fiscal policies, and the basics of international economic relations are examined. **(F;S;SS)**

### **ECON 305. Elementary Statistics Credit 3(3-1)**

This course is an introduction to descriptive statistics, including tabular and graphic presentation of data, measures of central tendency and of dispersion; index numbers; probability; probability distributions; sample design and sampling distributions; and estimation. Prerequisite: MATH 111 or MATH 131. **(F;S;SS)**

### **ECON 310. Advanced Statistics Credit 3(3-1)**

This course focuses on inferential statistics, including classical hypothesis testing, chi-square tests and analysis of variances; regression analysis; correlation analysis; time series analysis; and decision theory. Prerequisite: ECON 305. **(F;S;SS)**

### **ECON 401. Public Finance Credit 3(3-0)**

In this course, an analysis is made of the way federal, state, and local governments obtain and spend their revenues. Tax theories, incidence and impact are covered. Factors influencing governmental fiscal policies. **(F)**

**ECON 405. History of Economic Thought** **Credit 3(3-0)**

This course is a survey of the history of economic thought from the Middle Ages to John M. Keynes. The course attempts to show how and under what conditions the more important laws and theories have become a part of the body of modern economics. (S)

**ECON 410. Intermediate Microeconomic Theory** **Credit 3(3-0)**

This course examines the following: theoretical analysis of consumer demand; production and costs; optimum output and pricing behavior under various market conditions; allocation of factors of production and distribution of income; general equilibrium and welfare economics. Prerequisites: ECON 200 and junior standing. (F;S)

**ECON 412. Quantitative Analysis** **Credit 3(3-0)**

This course is intended to provide students with a solid foundation to basic mathematical methods employed in macro and micro economic theory. It includes elementary application of calculus and analytical geometry, and matrix algebra to illustrate income - expenditure model, demand theory, production function, problems of cost minimization and profit maximization, and linear programming. Prerequisites: ECON 200, 201; MATH 112 or 132. (F)

**ECON 415. Money and Banking** **Credit 3(3-0)**

This course introduces the student to money, banking, and recent developments in the U. S. financial system. The functions and definitions of money, various types of financial intermediaries and instruments, commercial banking and credit creation, the Federal Reserve System, monetary theory and policy, and international banking are covered. Prerequisites: ECON 200 and 201 and junior standing. (F;S;SS)

**ECON 420. Intermediate Macroeconomic Theory** **Credit 3(3-0)**

This course provides an intermediate level exploration of macroeconomic phenomena. Topics include aggregate demand and supply, income determination, equilibria in money and commodity markets, expectations theories, consumption, investment, inflation and unemployment trade-off, and monetary and fiscal policies for stabilization. Prerequisites: ECON 201 and junior standing. (F;S)

**ECON 425. Economics of Transportation** **Credit 3(3-0)**

In this course, the application of the tools of economics to problems of the transportation industry will be examined. Topics include economic regulation, cost-benefit, rate structure, externalities and social vs. individual decision-making. (F)

**ECON 501. Labor Relations** **Credit 3(3-0)**

This is an introductory course which focuses on labor relations. It surveys labor history, labor legislation and current labor relations management practices in both private and public sector environments. Topics covered include union organizing, representation elections, collective bargaining, grievance arbitration dispute resolution methods and employee governance in union/nonunion employment organizations. Prerequisite: Junior standing. (F)

**ECON 505. International Economic Relations** **Credit 3(3-0)**

This course examines the national specialization and international exchange. The history and significance of international trade among nations of the world will be studied. (F)

**ECON 510. Business Cycles** **Credit 3(3-0)**

In this course, the general instability of capitalism and its causes, seasonal fluctuations and the secular trend will be studied as well as business cycle history and theories and the influence of cycles on government fiscal policy. (S)

**ECON 512. Introduction to Econometrics** **Credit 3(3-0)**

This course is intended to provide the student with a working knowledge of applications of modern statistical tools for the formulation and the verification or refutation of economic theories. Primary attention is given to quantitative estimates of parameters in single equation stochastic

models. The course also introduces the student to simultaneous-equation models. Prerequisite: ECON 310 or consent of the instructor. (S)

### **ECON 515. Comparative Economic Systems**

**Credit 3(3-0)**

This course is a description and analytical study of the various systems that have developed in different countries at different times, motivations, production and distribution patterns. (S)

### **ECON 520. Economic Development**

**Credit 3(3-0)**

This course surveys the problem of economic growth and development in modern times and analyzes the present efforts to increase the rate of economic growth. Selected case studies will be drawn from both highly developed nations and lesser developed nations. Special emphasis will be given to the disproportionate growth in sectors of the United States' economy. (F)

### **ECON 525. Economics Seminar**

**Credit 3(3-0)**

This course utilizes economic tools in delineating, analyzing and presenting economic problems that are not included in other courses. This course will also include exposure to recent developments in economics. Prerequisite: ECON 310. (S)

### **ECON 599. Independent Study**

**Credit 3 or 6**

This course is designed for students involved in Cooperative Work-Study Program where the length and nature of their involvement warrant the awarding of such credit. The following conditions must be met in order to receive credit: (1) The credit will be determined by the department chairman at the time of registration; (2) the student must be registered at the University during the off-campus assignment; (3) the student should spend a minimum of three months in the off-campus experience for each three semester hours of academic credit. When the off-campus experience is in the form of seminar exposure, not less than forty-five clock hours should represent three semester hours of academic credit; and (4) the student will be required to present a written report and/or other evaluation criterion that will be evaluated by the supervising teacher. Any special problem or technical report pursued by the student will be subject to prior approval by the department chairman or supervising teacher. Prerequisite: Consent of the advisor and/or department chairperson. (F;S)

## **Advanced Undergraduate and Graduate**

### **ECON 601. Economic Understanding**

**Credit 3(3-0)**

An introduction to the principles of economics utilizing the macro approach. No credit towards a degree in economics. (S)

### **ECON 602. Manpower Problems and Prospects**

**Credit 3(3-0)**

An analysis of manpower development problems and prospects, with particular reference to the problems of unemployment, underemployment and discrimination. The course will focus on problem measurement, evaluation of existing policy and prospects for achievement of all human resource development. The course will invite an interdisciplinary participation on the part of students and faculty. Prerequisite: ECON 300 or 301; ECON 305 or equivalent, or consent of the instructor. (F)

### **ECON 603. Manpower Planning**

**Credit 3(3-0)**

Manpower planning centers chiefly on the adjustment necessary to adapt labor resources to changing job requirements. This course is designed to prepare students to create plans which will facilitate this adjustment. This course will attempt to acquaint the student with labor force and labor market behavior such that the is able to make planning decisions relating to job creation (increasing demand) and education and training (increasing supply). Planning will be done at both the national (macro) and local (micro) levels, with special emphasis on the latter. We will further attempt to evaluate all planning decision by use of Cost-Benefit Analysis or Multivariate Analysis. Prerequisite: ECON 300 or 301; ECON 305 or equivalent, or consent of the instructor. (S)



**ECON 604. Economics Evaluation Methods****Credit 3(3-0)**

The course will cover needed tools of research design, statistical reporting, cost benefit analysis and other related techniques for internal and external evaluations of human resource development programs. The course is designed both for inservice personnel currently employed by agencies, and for the regular student enrolled in a degree-granting program. (F)

**ECON 608. Managerial Economics****Credit 3(3- 0)**

This course will apply the tools and methods of microeconomics theory to specific management decision making in the private sector. Particular emphasis will be placed on pricing profit, maximization, capital budgeting and financial decisions in the long-run. Prerequisite: Senior standing and ECON 300 and 301 or consent of Instructor. (S)

**ECON 610. Consumer Economics****Credit 3(3-0)**

This course is designed to acquaint the student with the nature, scope and tools of consumer economics. It is particularly oriented to minority groups, thus focusing on the economic choices currently affecting groups with rising incomes and aspirations. This course will consider the economic choices faced by the consumers in maximizing satisfaction with limited means.

(F)

**ECON 615. Economic, Political and Social Aspects of the Black Experience** **Credit 3(3-0)**

A study of the political, economic and social tools of current public policy treating the subject of race in America. This course will examine the economic and social conditions of income, inequality and explore the national commitment to equal opportunity. Special emphasis will be placed on illustrations from North Carolina and adjacent states. (S)

**ECON 690. Special Topics in Economics****Credit 3(3-0)**

An examination of problems and analytical techniques in economics. The pursuit of certain specific or problem oriented area in economics not covered in other courses. Course content may vary from semester to semester. May not be repeated for credit. (F)

**TRANSPORTATION****TRAN 340. Introduction to Supply Chain Management****Credit 3(3-0)**

The management of the logistics function is examined with an emphasis on the impact on firm and supply chain. The individual elements of logistics management including inventory management, transportation, purchasing, facility location, distribution and materials handling, and information technology are examined. The integration of logistics activities across the supply chain is an important element of this course. (F;S)

**TRAN 360. Introduction to Transportation****Credit 3(3-0)**

Transportation provides the basic service of moving people and freight, creating time and place utility. Recent changes in the transportation industry have been dramatic and involve the value added throughout the supply chain. This course emphasizes the fundamental role and importance of transportation, its strategic importance, the effect of technology, and the changing structure of the industry due to competition and consolidation. (F;S)

**TRAN 431. Supply Chain Analysis****Credit 3(3-0)**

Design, develop and use decision models for analysis of logistics problems. Coursework emphasizes computer spreadsheet applications. (S)

**TRAN 450. Carrier Management****Credit 3(3-0)**

This course examines the application of management principles, policies and practice to carriers in various transportation modes. The provision of competitive services at affordable prices that would add value throughout the supply chain is an important aspect of the course. Major areas examined in the course include carrier-shipper relations with a synopsis of major traffic management functions; and analyses of carrier planning and operations, pricing, marketing,



finance and investment decisions, and personnel management. Prerequisite: TRAN 425 or consent of instructor. (F)

**TRAN 470. Urban Transportation Concepts** **Credit 3(3-0)**

This course is an analysis of the role of transportation in the urban environment. Topics covered include the transportation needs, demand for modes of transportation, transit operations, intelligent transportation systems, and urban transportation planning methods. (F)

**TRAN 580. International Logistics and Supply Chain Management** **Credit 3(3-0)**

This course will examine the participants and their responsibilities in international logistics and supply chains and the challenges involved in dealing with the increased difficulty of managing cultural differences, business practices, variances in systems of jurisprudence, terms of sale and payment, and governmental units. The course will also examine elements of international logistics such as inventory cost, transportation cost, and the complex documentation that is required in international trade. Prerequisite: TRAN 340. (S)

**TRAN 598. Independent Study** **Credit 3(3-0)**

This course is designed for students who want to explore a transportation or logistics topic in depth. The following conditions must be met. (1) The student must select a topic with a transportation/logistics faculty and study it for at least three hours per week for one semester. (2) The student will be required to present a written report and/or other evaluation criterion that will be evaluated by the supervising instructor. Prerequisite: Consent of the advisor and/or department chair. (S)

**TRAN 600. Special Topics in Transportation and Logistics** **Credit 3(3-0)**

This course is an examination of problems and analytical techniques in transportation and logistics. The pursuit of a specific or problem-oriented area in transportation and logistics not covered in other courses. Course content may vary from semester to semester. May not be repeated for credit. (F)

**TRAN 665. Transportation Regulation and National Policy** **Credit 3(3-0)**

This course will examine the development of transportation regulation in the United States and the subsequent development of federal transportation policy applicable to the individual modes. It will examine the deregulatory state of the industry, its impact on Federal Transportation Policy, and the current status of federal regulation as it applies to the various modes of transportation. Included will be an analysis of the environmental laws and safety regulations that have developed in the last few years. This course will assist those students studying for the Transportation Law Exam in the American Society of Traffic and Transportation series as well as the Practitioner Exam of the Surface Transportation Board. Prerequisites: BUAD 461. (F)

**TRAN 650. Transportation Law** **Credit 3(3-0)**

In this course, a detailed review of the development of transportation law will be made. An analysis of the Interstate Commerce Act and its impact on surface carriers will be completed. This course will assist those students planning to take the bar exam for the Interstate Commerce Commission or those students studying for the Transportation Law exam in the American Society of Traffic and Transportation series. Prerequisite: BUAD 461 or equivalent is recommended. (F)

**TRAN 660. National Transportation Policy** **Credit 3(3-0)**

This course is a seminar on national transportation problems. It will involve readings and research on several issues in transportation. Previous policy statements will be reviewed in light of current needs to determine what the current national transportation policy should be. (S)

**TRAN 670. Materials Management****Credit 3(3-0)**

This course emphasizes the integration of the logistics functions with the operations of the firm through the planning and controlling of the materials flow in order to achieve the desired levels of operating efficiency and customer service throughout the supply chain. The activities of planning, scheduling, materials requirements planning, capacity management, and production activity control are integrated with issues of inventory control, distribution and TQM.

**(F)****TRAN 672. Purchasing and Supply Management****Credit 3(3-0)**

This course emphasizes the importance of the procurement function for efficient operations, product quality, and supply chain integrations. The issues of supplier selection, performance measurement and relationship development/management, and their impact on the firm and fulfillment of customer expectations are emphasized. **(S)**

**DIRECTORY OF FACULTY**

**Abdussalam Addus** ..... **Associate Professor**  
B.A., Addis Ababa University; M.S., University of Wisconsin; Ph.D., Pennsylvania State University

**Julian Benjamin** ..... **Professor**  
B.S., New York University; M.S., Ph.D., State University of New York at Buffalo

**Mark Burkey** ..... **Assistant Professor**  
B.S., Appalachian State University; Ph.D., Duke University

**David Chen** ..... **Associate Professor**  
B.S., National Taiwan University; M.S., New Mexico State University; Ph.D., University of Wisconsin

**Darnell Cloud** ..... **Assistant Professor**  
B.S., Florida A&M University; Ph.D., University of Wisconsin-Milwaukee

**Basil Coley** ..... **Professor and Interim Chairperson**  
B.S., A&T College; M.S., Pennsylvania State University; Ph.D., University of Illinois

**Dong Jeong** ..... **Associate Professor**  
B.A., Teachers College, Kyung-Pook National University, Korea; M.A., University of Hawaii; Ph.D., Wayne State University

**Anwar Khan** ..... **Professor**  
B.A., M.A., University of Punjab; M.A., Ph.D., University of Wisconsin

**Vereda King** ..... **Associate Professor**  
B.A., Johnson C. Smith University; M.B.A., North Carolina Central University; Ph.D., Duke University

**Lawrence Morse** ..... **Associate Professor**  
B.A., Oberlin College; Ph.D., University of Minnesota

**Kofi Obeng** ..... **UPS Chair, Professor**  
B.Sc., University of Science & Technology (Kumasi, Ghana); A.M., Ph.D., University of Pennsylvania

**Gregory Price** ..... **Associate Professor**  
B.S., Morehouse; M.A., Ph.D., University of Wisconsin at Milwaukee

**Ryoichi Sakano . . . . . Associate Professor**  
B.S., Keio University; M.B.A., M.A., University of North Carolina at Greensboro; Ph.D., University of Alabama

**Scott Simkins . . . . . Associate Professor**  
B.A., St. John's University; Ph.D., University of Iowa

**Michael Simmons . . . . Assistant Professor and Director of the Transportation Institute**  
B.S., Arkansas AM&N; M.A., University of Wisconsin; Ph.D., Washington State University

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## SCHOOL OF EDUCATION

<http://www.ncat.edu/~schofed/>

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**Lelia Vickers, Dean**

**Larry Powers, Associate Dean**

The School of Education prepares students for careers in elementary and secondary schools and for professional careers in industry, government and other agencies. The programs of study are planned to enable students to attain competence in both specialized and general areas of education.

The School of Education includes the following departments: Curriculum and Instruction, Human Development and Services, and Health, Physical Education and Recreation.

All professional teacher education programs at the University are monitored by the School of Education. The School of Education and Graduate Studies cooperate with the supervision of graduate teacher education programs, especially as they relate to teacher licensure. Moreover, the School of Education serves as the central agency for administering all teacher education programs.

The School of Education offers programs leading to the Bachelor of Science degree in Health, Physical Education and Recreation, Elementary Education and Special Education (cross-categorical).

In addition to the aforementioned programs, satisfactory completion of an undergraduate program offered by other schools and departments in cooperation with the School of Education enables students to receive the Bachelor of Science or teacher licensure in one of the following areas: Agricultural Education; Art Education; Biology Education; Business Education; Birth Through Kindergarten; Chemistry Education; English Education; French Education; History Education; Human Environment and Family Sciences; Industrial Cooperative Training; Mathematics Education; Music Education; Physics Education; Social Studies Education; Spanish Education; Technology Education; Trade Preparatory Programs; and School Social Work. The general school goals are:

1. To offer multicultural programs which promote the development of needed occupational and professional skills for students;
2. To provide opportunities for program enrichment for faculty, students and the community;
3. To continue to develop and improve all education programs and services, including student academic advisement;
4. To encourage continual faculty and student participation in curriculum reform in each academic department; and
5. To continually maintain full accreditation of all programs on the state, regional, and national levels which are administered by the School of Education.
6. To continue to improve the quality of undergraduate instruction as measured by grade point averages and other measurable performance competencies.
7. To continue to encourage and promote faculty involvement and active participation in research and community affairs.
8. To continue the evaluation of program effectiveness in the School of Education.
9. To upgrade physical facilities and equipment needed in the School of Education to meet optimal operational levels.



10. To fulfill school goals via a clinical setting governed by a public school and university partnership.

### **ACCREDITATION**

The Teacher Education Program was accredited initially in 1976 by the National Council for the Accreditation of Teacher Education. This national accreditation was reaffirmed in 2002 until 2006.

### **DEGREES OFFERED**

Elementary Education – Bachelor of Science  
Special Education – Bachelor of Science  
Health and Physical Education (Teaching) – Bachelor of Science  
Health and Physical Education (Fitness/Wellness Management) – Bachelor of Science  
Recreation Administration – Bachelor of Science  
Elementary Education, General – Master of Education\*  
Instructional Technology – Master of Science \*  
Master of School Administration – Master of Science\*  
Health and Physical Education – Master of Science\*  
Adult Education – Master of Science\*  
Human Resources (Agency Counseling) – Master of Science\*  
Human Resources (Vocational Rehabilitation) – Master of Science\*  
Human Resources (Business and Industry) – Master of Science\*  
Counselor Education – Master of Science\*

\* See the Graduate School Bulletin

### **GENERAL PROGRAM REQUIREMENTS**

General program requirements for School of Education programs can be found under the Teacher Education section in this catalogue titled General Education. Admission to the Recreation major is based upon the university admissions requirements.

### **THE TEACHER EDUCATION PROGRAM**

#### **The Conceptual Framework(s)**

The School of Education has selected as its program theme “The Professional Educator: A Catalyst for Learning”. From the theme, a conceptual framework has been developed which includes a rationale and organizing principles that guide the development of the curriculum for professional education including the categorization of knowledge. The Unit’s vision, mission, and dispositions emerged directly from the university’s mission. Both the Unit and University strive to transmit a cultural experience for our candidates to be transformed into catalysts for learning. Candidates learn to create their own learning from the experiences of the faculty, curricula and field experience opportunities, and other education leaders. Thus, because candidates create their learning outcomes from the interaction with their faculty and curricula, candidates are philosophically constructivists. While the constructivist view is primarily the philosophy by which education programs are structured, content specialists and school personnel programs might have other philosophical basis. The conceptual framework is sufficiently broad as an umbrella to embrace all of the programs. The conceptual framework is the guiding force for program development and performance assessment. The outcome of the framework is the development of unit standards for all programs, which are Diversity, Assessment, Reflection and Technology (DART).

The program of teacher education seeks to improve the quality of education available to the youth of North Carolina through improved preparation of teachers and other school personnel; such as guidance counselors. To that end, it offers both undergraduate and graduate programs of professional study which represent a continuum with sequential general goals. The program seeks, therefore, to realize the following goals:

1. To prepare persons to take their places as competent members of the profession of education; and
2. advanced study for school personnel already established in education.

In order to carry out general goal "number one" of the Teacher Education Program as listed above, the objectives have been listed below:

1. Plan experiences for students in teacher education which will include the development of persons as individuals as well as specialists in a chosen academic area.
2. Plan multicultural learning environments conducive to appropriate stimulation for developing needed competencies in the following areas:
  - a. personal development
  - b. social development
  - c. professional development
  - d. citizenship maturity
3. Provide the highest level of instruction by way of well-qualified teaching and research personnel who can provide integrated experiences for teacher education students, which will make it possible for them to gain personal, social and academic competencies in the practice of the education profession.
4. Design an organizational structure to delineate and describe those competencies which will assure for teacher education students a quality experience specifically related to the vocational specialty that they will be expected to practice.
5. Plan all program development, evaluation, and supervision so that experiences gained are clearly oriented to the pre-service dimension of the Teacher Education Program.

As the teacher education unit observes general goal "number two," the following objectives have been established:

1. Plan multicultural programs and instructional technology which will involve competencies already developed and which are being practiced, and infuse additional high level experiences that will give definite meaning to the competencies being sought.
2. Provide a learning environment which will stimulate in advanced students the desire to delineate and articulate those competencies in their respective specialties that will insure for them a high level of performance in the practice of their chosen vocation.
3. Emphasize those competencies which are necessary for all advanced students in education. Such competencies allow advanced students to have extensive and intensive experiences in research.
4. Plan and assess measurable competencies of advanced students which will permit these students to attain levels of leadership commensurate with high expectations.

The Office of the University Registrar and the Dean of the School of Education are the central agencies vested with the authority and responsibility to recommend to the State Department of Public Instruction students who are applying for licensure in the following fields:

- |                                  |   |
|----------------------------------|---|
| 1. Agriculture                   | 13. Industrial Cooperative Training                 |
| 2. Art                           | 14. Mathematics                                     |
| 3. Birth through Kindergarten    | 15. Music   |
| 4. Biology                       | 16. Physical Education                              |
| 5. Career Exploration            | 17. Physics   |
| 6. Chemistry                     | 18. School Social Work                              |
| 7. Comprehensive Social Studies  | 19. Spanish   |
| 8. Elementary Education          | 20. Special Education (Cross-Categorical)           |
| 9. English                       | 21. Technology Education                            |
| 10. French                       | 22. Trade Preparatory Programs                      |
| 11. History                      | 23. Vocational Business Education                   |
| 12. Family and Consumer Sciences | 24. Vocational Business Education - Data Processing |

In recognition of this function, the approval or endorsement of the department providing courses in the subject matter areas in which the candidate is to be licensed must be secured prior to the approval or endorsement of the dean. The University reserves the right to refuse to recommend any applicants for licensure when they are deficient in mental or physical health, scholarship, character, or other qualifications deemed necessary for success in the profession of education.

The program in teacher education is divided into three separate but interrelated phases: (1) general education; (2) subject-matter specialization; and (3) professional education.

### **GENERAL EDUCATION**

The general education phase of the Teacher Education Program functions to provide experience and learning which meet the fundamental needs of all teachers as persons, both in the role of teacher and citizen in a democracy. General education provides for the student the understanding, the knowledge, the appreciation, and the sensitivity attainable through the study of a broad range of materials and concepts ranging across the humanities, the arts, the social sciences, the natural sciences and mathematics. It provides a broad understanding of the cultural heritage and of the physical and social environments. General education is also an essential foundation for the teaching specialty and professional education.

All teacher education students are required to complete with an overall 2.80 grade point average in the following courses or their equivalents in general education:

English 100 and 101, Ideas and their Expressions I, II

Mathematics 101, 102, Fundamentals of Algebra and Trigonometry I, II; Mathematics III, College Algebra and Trigonometry; and Math 112, Calculus for non-mathematics majors

Speech 250, Speech Fundamentals

Biology 100, Biological Science or Chemistry 100, 110 (lab), Physical Sciences, or other natural sciences

Psychology 320, General Psychology

History 100, 101, History of World Civilization I, II or History 204, United States History (1492-1877) and History 205, United States History (since 1877), and Anthropology, Political Sciences, Economics or Geography



Humanities 200, 201, Survey of Humanities I, II or Humanities 203, Humanities Perspectives of the South, and English 210, Introduction to Literary Studies  
Physical Education 101 or 102, Fundamentals of Physical Education  
Health Education 200, Personal Health

### **SUBJECT-MATTER SPECIALIZATION**

Subject-matter specialization provides opportunities for the student to understand the theoretical basis upon which subject content is developed and organized. It also provides the student an opportunity to accumulate and understand a vast body of facts which comprises one's selected discipline. The function of knowledge in the development of mature scholarship is emphasized in this segment of the prospective teacher's experiences also.

### **PROFESSIONAL EDUCATION**

The professional education phase of the Teacher-Education Program is designed to induct the prospective teacher into the profession of education. During this segment of the student's experience, he/she develops definable competence in the following areas:

1. Understanding the school as a social system with structures, functions, and special goals.
2. Understanding the learner (student) as a dynamic and unique personality capable of wide variation in behavioral adjustment.
3. Understanding the functional nature of human learning, how to diagnose and assess it, and how it takes place in individual and group settings, especially in organized school environments.
4. Understanding which resources facilitate learning and how these resources may be effectively used in a learning-teaching environment.
5. Understanding the processes at work between the school and the wider society which have influenced the learning-teaching situation, historically.
6. Understanding effective techniques and strategies for enhancing learning among students who have a wide range of needs, abilities, and interests.
7. Understanding the education profession as a medium through which continuous individual development of the candidate is paramount in order to maintain accountability to the profession proper, and to society in general.

### **SECOND CONCENTRATION (MAJOR) REQUIREMENT**

Effective Fall 1989, freshman students in selected teacher education majors are required to complete a second concentration in a basic academic discipline as well as the necessary professional and major specialty courses.

The planning of the academic program is under the guidance of the appropriate advisor. Each candidate must acquire a minimum of 24 semester hours to fulfill the second major requirement.

The approved second majors are:

Agricultural Education:

Agricultural Science, Animal Science, Agricultural Business and Marketing, Agricultural Communications, Natural and Environmental Sciences, Plant and Soil Science, Rural Sociology



Elementary Education:

Art, English, History, Mathematics, Spanish, Political Science, Psychology, Sociology, French

Special Education:

Art, Biology, English, History, Mathematics, Spanish

Business Education-basic:

Computer Technology, Economics, Marketing, English, Mathematics

Business Education-comprehensive:

Economics

Technology Education:

Art, English, French, History, Mathematics, Political Science, Psychology, Sociology

Vocational Industrial Education:

Art, English, French, History, Mathematics, Political Science, Psychology, Sociology

Health and Physical Education:

Art, Biology, English, French, History, Mathematics, Psychology, Sociology

**TEACHER EDUCATION ADMISSION AND RETENTION STANDARDS,  
INCLUDING LICENSURE PROCEDURES**

Each current and prospective teacher education candidate will be informed, on an individual basis, of the probability that he or she might successfully complete the requirements for initial licensure as a teacher in North Carolina (CUIN 301). This information will be a part of the regular assessment system of the School of Education and will include a discussion of the SAT score, Praxis I, grade point average, dispositions and other predictive measures.

**ADMISSION**

The Teacher Education Council makes all policies governing the entire Teacher Education Program; therefore, admission, retention and exit procedures are reviewed by the Council. Formal admission to the Teacher Education Program is normally at the end of the sophomore year when the general studies requirements have been completed; however, teaching majors are identified at admission to the University.

Candidates must meet each of the following criteria for formal admission to the licensure program:

1. Completed application approved by academic department of licensure area
2. Minimum cumulative 2.80 GPA (on a 4.00 scale)
3. Scores on file in Dean's Office from the following standardized tests:
  - 16 Personality Factors Interest Inventory
  - Passing Scores on PRAXIS I (PPST) or (CBT)
4. Interview by Teacher Education Panel
5. Acquire a minimum of 60 credit hours (2.80 GPA)

Departments clear applicants on items 1-5 before applications are approved and submitted to the Office of the Dean, School of Education. The dean will notify the applicants in writing of admission or rejection. Admission cards are issued to formally admitted students at the regularly scheduled Teacher Education Student Meetings.

## TEACHER EDUCATION ASSESSMENT BENCHMARK

Freshmen students may begin the formal admission process during their first semester of matriculation.

### **Year I: Freshman Year (Benchmark/Gateway)**

1. Complete the Freshman Year Program in the major as outlined.
2. Pass 30 semester hours of course work prior to the sophomore year (2.80 GPA).
3. Students are required to join Student North Carolina Association of Educators (SNCAE).
4. Meet with advisor at least three times each semester.
5. Maintain a minimum cumulative grade point average of 2.8 on a 4.0 scale.
6. Pass the PRAXIS I Test.

### **Year II: Sophomore Year (Benchmark/Gateway)**

*All Students must be admitted to teacher education before completion of 80 semester hours*

1. Maintain a minimum cumulative grade point average of 2.8 on a 4.0 scale.
2. Participate in SNCAE.
3. Take the 16 Personality Factors Interest Inventory.
4. Complete 75% of the General Studies Program.
5. Complete interview by Teacher Education Council Panel.
6. Complete formal application to Teacher Education.
7. Receive Teacher Education Formal Admission Letter.

## ENROLLMENT IN ADVANCED COURSES

**Only formally admitted candidates may enroll in advanced courses in the Professional Education Sequence.** Undergraduate degree-seeking candidates are not permitted to complete more than one-half of the Professional Studies Sequence (excluding student teaching) prior to being formally admitted to the Teacher Education Program.

The Professional Studies Sequence for secondary and specialty areas includes: CUIN 102, 301, 400, 436, 500, 525 or appropriate methods courses, 624, and 560. All courses numbered 500 and above in this sequence require formal admission to the Teacher Education Program or written permission of the chairperson and dean for those persons seeking licensure only.

## TRANSFER TO THE TEACHER EDUCATION PROGRAM

All students transferring into the Teacher Education Program must have a cumulative GPA of 2.80 (on a 4.0 scale) and must meet all other requirements for entry to the Teacher Education Program.

## RETENTION

To remain in the Teacher Education Program, candidates must maintain a cumulative academic average of 2.80 in their subject area and in professional education. Students must meet with their advisors a minimum of three times per term to discuss their progress in the program. If students fail to maintain academic requirements or for other reasons, they will be notified of their probationary status or dropped from the program by their respective academic departments and the dean.

## **READMISSION TO THE TEACHER EDUCATION PROGRAM**

Once a student has been dropped from the Teacher Education Program for any reason, the following steps must be taken before a student will be readmitted:

1. The students must file a formal application for re-admittance to the Teacher Education Program (cumulative 2.80 GPA).
2. The application of the student along with the student's complete profile must be brought before the Teacher Education Council for action.
3. The student, department chairperson, and dean of the school involved will be formally notified in writing of the action of the Teacher Education Council with reference to the student's application for readmission to the Teacher Education Program.

## **STUDENT TEACHING**

*(Students are required to pass all licensure tests prior to admission to student teaching)*

Admission to Student Teaching requires (1) formal admission to the Teacher Education Program, (2) an approved student teaching application form signed by the student's advisor and department chairperson, (3) a personnel data sheet which is needed for placement, (4) a cumulative GPA of 2.80, and (5) copy of individual passing scores on Praxis II in licensure area.

## **LICENSURE**

After completing the Teacher Education Program, the candidate must apply for state licensure in the School of Education dean's office, which will send the completed application form to the Office of Registration and Records. This office will attach a copy of the student's official transcript to the application form and forward it to the State Department of Public Instruction in Raleigh, North Carolina.

The candidate is required to take and pass all appropriate PRAXIS II tests before they are recommended for licensure. During the 2001-2002 academic year, 29 students took the Praxis II test and 29 passed.

The candidate should consult with his/her advisor, department chairperson or dean to determine passing scores on Praxis Tests for licensure.

**AS MANDATED BY THE STATE DEPARTMENT OF PUBLIC INSTRUCTION, ALL CANDIDATES FOR TEACHER LICENSURE MUST PRODUCE AN ELECTRONIC PORTFOLIO MEETING ADVANCED TECHNOLOGY COMPETENCIES FOR TEACHING SKILLS DURING THEIR PROGRAM OF STUDY. THE UNIVERSITY, THROUGH COURSEWORK, WILL PROVIDE OPPORTUNITIES FOR STUDENTS TO PRODUCE MATERIALS NECESSARY TO FULFILL THE TECHNOLOGY PORTFOLIO REQUIREMENT.**

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## **Department of Curriculum and Instruction**

<http://prometheus.educ.ncat.edu/users/cuin/>

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**Dorothy D. Leflore, Chairperson**

### **OBJECTIVES**

The Department of Curriculum and Instruction provides the professional studies component for the preparation of effective teachers and school personnel at the bachelor's degree and master's degree levels. The department cooperates with the various academic departments of the University for teacher education preparation. In addition, the department offers graduate programs in the areas of elementary education and instructional technology.

### **DEGREES OFFERED**

Elementary Education – Bachelor of Science

Special Education – Bachelor of Science

Elementary Education General, General – Master of Science\*

Instructional Technology – Master of Science \*

*\* See the Graduate School Bulletin*

### **PROFESSIONAL STUDIES COMPONENT**

The professional studies component of the Teacher Education Program is designed to provide for the development of those competencies essential to the professional role of the teacher. Integrated throughout the professional component are standards for teacher education programs which are diversity, assessment, reflection and technology (DART).

*Undergraduate.* Approximately eighteen percent of the undergraduate curriculum constitutes the professional studies component. Specific teacher competencies are developed through the provision of:

1. A study of the processes and theories of human growth development, learning and teaching with field experiences.
2. A humanistic study of the problems, issues and trends in education within a historical, philosophical, sociological, economical and governmental framework.
3. Instruction and experiences in creating and using learning environments.
4. A study of the process and techniques for analyzing and evaluating the teaching learning environment.
5. Experiences for the acquisition of knowledge, attitudes, and skills for positive human and social relationships (dispositions).
6. Integrating technology throughout the program.

### **ELEMENTARY EDUCATION PROGRAM**

The objectives of the undergraduate elementary education program are: to provide a course of study to prepare students for teaching; to offer a course of study which promotes the development of general content and professional knowledge that serves as a foundation for appropriate educational practices; and to provide opportunities which develop knowledge, skills and disposition.

The emphasis of the program is on the application of learning theory, pedagogy as it relates to instructional practice. The program provides opportunities for prospective teachers to plan, organize, and implement developmentally appropriate instructional experiences. Experiences



that expedites development and learning in the following areas are emphasized: cognitive, language, physical, social, psychological and aesthetic. Also, the program provides for sequentially planned field experiences, which enables potential teachers to apply knowledge and skill to actual learning situations (theory to practice).

Candidates must meet the requirements for admission, retention, and exit from the University's Teacher Education Program. Students majoring in Special Education will also have to take a second area of concentration consisting of approximately 24 hours (see advisor for second area alternatives).

### **SPECIAL EDUCATION PROGRAM**

The Special Education Cross-Categorical Program is designed to develop professional competencies and skills needed to teach students with high incidence disabilities (learning, behavioral and mental) who are mild to moderately disabled. The program is interdisciplinary and requires a minimum of 128 semester credit hours. Satisfactory completion of the curriculum leads to the Bachelor of Science degree in Special Education and to North Carolina Teacher Licensure in grades K-12.

Candidates must meet the requirements for admission, retention, and exit from the University's Teacher Education Program. Students majoring in Special Education will also have to take a second area of concentration consisting of approximately 24 hours (see advisor for second area alternatives).

### **DEPARTMENTAL REQUIREMENTS**

Candidates majoring in elementary education and special education at the undergraduate level must complete 128 semester hours consistent with the curriculum guide. The curriculum guide includes second major/elective hours in a basic academic discipline. Candidates must meet the requirements for admission to teacher education. Individuals should refer to the section entitled *Teacher Education Admission and Retention Standards (Undergraduate Bulletin)* for pertinent information relative to requirements as a teacher education candidate. Students must accumulate a minimum of "C" in major courses and specialty area courses.

### **INITIAL LICENSURE REQUIREMENTS**

*Undergraduate Students*-The candidate is required to take the Praxis I (Pre-Professional Skills Tests) (PPST) or the Computer-Based Tests (CBT) tests in reading, writing, and mathematics. For licensure, candidates must take the Praxis II (Specialty Area or Subject Assessment Tests). Candidates must attain passing scores on these respective tests as established by the State Board of Education.

*Graduate Students*-Individuals who have graduated from an accredited college/university and did not pursue a program of study or complete requirements leading to teacher certification should file application for admission to the School of Graduate Studies. Refer to the section, *Procedures for Graduates Who Completed A Non-Teacher Education (undergraduate) Program* for explicit instructions.

## REQUIRED MAJOR COURSES FOR ELEMENTARY EDUCATION

*Students must attain a grade of "C" in the following courses:*

CUIN 101	CUIN 401	CUIN 513
CUIN 102	CUIN 404	CUIN 514
CUIN 103	CUIN 415	CUIN 515
CUIN 104	CUIN 436	CUIN 542
CUIN 301	CUIN 510	CUIN 543
CUIN 316	CUIN 511	CUIN 544
CUIN 400	CUIN 512	CUIN 559

## CURRICULUM GUIDE FOR ELEMENTARY EDUCATION

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST (Select one: HIST 201, 202, 204, or 205)	3	CHEM 100	3
BIOL 100	4	CUIN 104 (Take Praxis I Tests)	0
CUIN 101	1	SPCH 250	3
CUIN 102	2	GEOG 210	3
CUIN 103	<u>1</u>	PHED 200	<u>2</u>
	17		17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ENGL (Select one: ENGL 201, 333)	3
HEFS 311	3	PHED 442	2
SPED 350	3	PHED 310	3
PSYC 320	3	CUIN 316	3
CUIN 301	2	Second Concentration	<u>6</u>
Second Concentration	<u>3</u>		17
	17		

*Benchmark: Students must pass Praxis I and be admitted to the Teacher Education. Must pass CUIN 301, 102, 316, 415, PHED 442, 310, and SPED 350. Must complete sixty (60) hours before applying to the Teacher Education Program. Must maintain a 2.8 GPA.*

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 400	3	CUIN 510	2
CUIN 401	3	CUIN 510 Lab	0
CUIN 415	3	CUIN 511	3
CUIN 436	3	CUIN 512	2
Second Concentration	<u>3</u>	CUIN 513	2
	15	CUIN 514	2
		Second Concentration	<u>6</u>
			17

*Benchmark: Students must pass CUIN 400, 401, 510 through 514, and 436. Must maintain 2.8 GPA.*

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 404	0	CUIN 559	<u>12</u>
CUIN 542	3		12
CUIN 543	3		
CUIN 544	3		
CUIN 515	2		
Second Concentration	<u>6</u>		
	17		

Total Credit Hours: 129

*Benchmark: Students must pass CUIN 515, 543, 542, 544 and 404; and the Specialty Area test of Praxis II before Student Teaching. Must maintain 2.8 GPA. To graduate must meet all requirements of the program.*

## REQUIRED MAJOR COURSES FOR SPECIAL EDUCATION

*Students must attain a grade of "C" in the following courses:*

SPED 325	SPED 441	SPED 546
SPED 350	SPED 442	SPED 548
SPED 351	SPED 536	SPED 564
SPED 352	SPED 545	SPED 565
SPED 353		

## CURRICULUM GUIDE FOR SPECIAL EDUCATION

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
BIOL 100	4	CHEM 100	3
HIST (Select one: HIST 201, 202, 204 or 205)	3	HIST (Select one: HIST 201, 202, 204 or 205)	3
CUIN 101	1	SPCH 250	3
CUIN 102	2	PHED 442	<u>2</u>
SPED 325	<u>1</u>		17
	17		

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL (ENGL 200, 201, 333)	3	ENGL (Select one: ENGL 200, 201, 333)	3
GEOG (Select one: GEOG 200, 210 or EASC 201)	3	PSYC 324 or HEFS 311	3
SPED 350	3	CUIN 415	2
CUIN 301	2	SPED 351	3
Second Concentration	<u>6</u>	SPED 352	3
	17	Second Concentration	<u>3</u>
			17

*Benchmark: Students must pass Praxis I and be admitted to the Teacher Education Program to remain a special education major. Must pass CUIN 102, 301, 415, SPED 350, 351 and 352. Must complete sixty (60) hours before applying to the Teacher Education Program and maintain a 2.8 GPA.*

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 400	3	SPED 353	3
CUIN 511	3	SPED 441	2
CUIN 514	2	SPED 536	3
CUIN 401	3	SPED 548	3
SPED 564	3	Second Concentration	<u>6</u>
Second Concentration	<u>3</u>		17
	17		

*Benchmark: Students must pass CUIN 400, 401, 511, 514, SPED 353, 441, 536, 548 and 564 and must maintain 2.8 GPA.*

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHED 563	3	SPED 545	2
SPED 546	2	CUIN 560	9
SPED 565	3	SPED 442	<u>1</u>
Second Concentration	<u>6</u>		12
	14		

Total Credit Hours: 128

*Benchmark: Students must pass PHED 563, SPED 546, 565 and pass Praxis II before student teaching. Must maintain a 2.8 GPA. All requirements of the program must be met to graduate.*

*SECOND CONCENTRATIONS: Art, Biology, English, History, Math, and Spanish*

# CURRICULUM GUIDE FOR PROFESSIONAL STUDIES COMPONENT FOR SECONDARY AND SPECIALTY AREAS

## SOPHOMORE YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
CUIN 102	2	CUIN 301	<u>2</u>
*PSYC 320	<u>3</u>		2
	5		

## JUNIOR YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
CUIN 400	3	CUIN 436	3

## SENIOR YEAR

<i>Spring Semester</i>	<i>Credit</i>
CUIN 500	3
CUIN 525 or appropriate methods course	3
CUIN 560	6
CUIN 624	<u>3</u>
	15

## COURSE DESCRIPTIONS IN CURRICULUM AND INSTRUCTION

### Undergraduate

#### **CUIN 101. Computer Fundamentals for Teachers Credit 1 (0-2)**

This course provides a comprehensive set of experiences designed to meet the North Carolina Department of Public Instruction's requirements for basic level computer competencies for public school teachers. Topics include word processing, spreadsheet usage, database design and management, teacher utilities, and fundamentals of modern computing. Students should expect to spend at least one hour a week outside of class time using a computer. Grade: Pass/Fail. (F;S)

#### **CUIN 102. Introduction to Teacher Education I Credit 2(2-0)**

This course is designed to provide prospective (new and freshman) teacher education students with an orientation to the Teacher Education Program requirements and to assist them in preparation for the Praxis I (mathematics, reading and writing) examinations. This course is required of all undergraduate prospective teacher education majors. Students are required to have 6 hours of computer practice time per week. Grade: Pass/Fail. (F;S;SS)

#### **CUIN 103. Reasoning and Writing Credit 1(1-0)**

This course is designed to help students make the transition to conceptual learning, critical thinking and writing. The course emphasizes the use of graphic organizers and reasoning strategies to enhance learning and the writing process as a response to critical thinking and conceptual learning across disciplines. Grade: Pass/Fail. (F;S;SS)

#### **CUIN 104. Introduction to Teacher Education II Credit 0(1-0)**

This course provides students with information relative to the application process for formal admission to the Teacher Education Program. Students are required to take the Praxis I (mathematics, reading, and writing) examinations either on the scheduled Educational Testing Service (ETS) dates or on the Computer Based Test (CBT) format. Grade: Satisfactory/Unsatisfactory. (F;S)

#### **CUIN 301. Philosophical and Sociological Foundations of Education Credit 2(2-0)**

This course provides a view of the educative process and its philosophical foundations with emphasis on the philosophical implications of education as they relate to student curriculum, teacher and the institution. There will be classroom observation/participation experiences. (F;S;SS)



**CUIN 302. Field Experiences and Community Services** **Credit 1-3**

This course provides field experiences as tutor, assistant participant or employee in a school or education related institution, organization, agency, community, church, business or industrial program involving interaction with children, youth or adults. Evaluation and written reports planned in consultation with an instructor will be required. (F;S;SS)

**CUIN 303. Socio-Philosophical Aspects of Education** **Credit 4(4-0)**

This course examines past and contemporary factors in American education through philosophical and sociological perspectives. Problems and possibilities inherent in relating theory and practice in education will be explored. (F;S;SS)

**CUIN 315. Family, Community, and School** **Credit 3(3-0)**

This course studies the relationships of the family, community, and school that involve the learner, with emphasis on the young child. Attention will be given to family structure, parent education and involvement with the school and community, community development and participation in education. Research and identification of current problems and issues will be considered and projects relating to the local community will be completed. (F;S;SS)

**CUIN 316. Creative Art** **Credit 3(3-0)**

This course addresses the creative process and co-relation/integration of the arts (visual, dance, music, and theatre) to enhance student learning in other subject areas. The course will present a study in art education of sufficient depth to enable the student to understand what the arts are and their value, especially in relationship to the development of positive attitudes, perceptual awareness, and higher-order thinking skills. Students will demonstrate an understanding of the basic concepts, elements, and knowledge of resources and materials for use in the K-6 classroom. (S;SS)

**CUIN 400. Psychological Foundations of Education – Growth and Development** **Credit 3(2-2)**

This course is restricted to Teacher Education students and studies the psychological principles governing the interests and needs of pre-adolescence and adolescence; emphasis is placed on general principles of growth and development, physical, motor, intellectual, social, emotional and moral aspects. Observing, recording and interpreting human behavior including functional conceptions of learning will be provided in laboratory settings. (Field Experience Required). Prerequisite: CUIN 102 (Formal admission to Teacher Education). (F;S;SS)

**CUIN 401. Classroom and Behavioral Management** **Credit 3(3-0)**

This course is designed to give preservice elementary and special education majors a broad range of philosophies and concepts about classroom and student behavior management. Concepts will include preventive, diagnostic, and prescriptive behavior planning and implementation for classroom management. (F;S;SS)

**CUIN 402. Extramural Studies I** **Credit 1-3**

This course provides off-campus experiences, testing or exploring relevance of education to real world situations in an agency, organization, institution or business. There will be a project report and evaluation by permission of department. (F; S; SS)

**CUIN 404. Teacher Licensure - Review Seminar** **Credit 0(1-0)**

This course offers students an opportunity to discuss, review and prepare for the required state licensure examinations. Students will be expected to acquire the passing score on the specialty area licensure examination in order to receive a "Satisfactory" in this course. Grade: Satisfactory/Unsatisfactory. Prerequisite: Admission to Teacher Education. (F;S;SS)

**CUIN 412. Classroom Management** **Credit 3(3-0)**

This course examines major schools of thought involved in classroom management and motivation. Alternative ways to help children develop self-control and acquire practical strategies

and techniques for successful classroom management to maximize student learning will be explored. Prerequisites: CUIN 102. (F;S;SS)

**CUIN 413. Learning and Practice** **Credit 3(3-0)**

This course is a survey and analysis of learning theories and the learning process with applications to education. The integration of theoretical viewpoints and research findings with observations and experience in classroom situations will be studied. Prerequisite: PSYC 320. (F;S;SS)

**CUIN 415. Curriculum Design and Instructional Planning in the Elementary School** **Credit 2(2-0)**

This course emphasizes planning a developmentally appropriate and integrated classroom program, which reflects proven educational, practices and researches. The course includes exposure to various sources of curriculum relative to content, organization and instruction. (S;SS)

**CUIN 436. Evaluation and Assessment** **Credit 3(2-2)**

This course is a basic study of standardized and teacher-made measuring devices, acceptable methods selecting, administering, and interpreting all types of tests applicable to the school and classroom. Prerequisite: CUIN 102. (F;S;SS)

**CUIN 451. Foundations of Early Childhood Education** **Credit 2(2-0)**

This course is the study of the historical background and the sociological, philosophical, economic factor and current issues relating to early childhood education; (the physical plant, equipment, supplies and other facilities necessary for appropriate experiences). (F;S;SS)

*All courses numbered 500 and above require formal admission to the Teacher Education Program.*

**CUIN 500. Principles and Curricula of Secondary Schools\*** **Credit 3(3-0)**

This course examines the history, nature, and function of the secondary school and its relationship to the elementary school and adult life. Prerequisite: 12 semester hours in education and psychology. (F;S;SS)

**CUIN 501. Methods of Research and Evaluation in Health Physical Education** **Credit 2(1-2)**

This course utilizes various research methods as applied to health education and physical education and the study of methods of evaluating biological, social, and physiological outcomes for health education and physical education. Elementary statistical procedures are utilized. Prerequisite: CUIN 436. (F;S;SS)

**CUIN 510. Language Arts in the Elementary School** **Credit 2(2-0)**

This course focuses on content, resources and materials for teaching language arts in grade K-6. Emphasis is on the interrelatedness of listening, speaking, viewing, reading, and writing. To be taken with 511, 512, 513, 514. Prerequisite: CUIN 102. (F;S)

**CUIN 510. Language Arts Lab** **Credit 0(0-0)**

Candidates will complete 2 hours of field experience per week.

**CUIN 511. Reading in the Elementary School** **Credit 3(30)**

This course focuses on content and materials used in reading instruction grades K-6. Attention to the acquisition, development and extension of language will be emphasized in this course. To be taken with 510, 512, 513, 514. Prerequisite: CUIN 102. (F;S)

**CUIN 512. Social Studies in the Elementary School** **Credit 2(2-0)**

This course addresses the instructional program in social studies for grades K-6. Emphasis is on content, resources, and materials in this course. To be taken with 510, 511, 513, 514. Prerequisite: CUIN 102. (F;S)

- CUIN 513. Science in the Elementary School** **Credit 2(2-0)**  
 This course stresses an integrated discovery-centered program with developmentally appropriate experiences for children in grades K-6. Emphasis is on the processes of science and assessment of student learning. To be taken with 510, 511, 512, 514. Prerequisite: CUIN 102. (F;S)
- CUIN 514. Mathematics in the Elementary School** **Credit 2(2-0)**  
 This course focuses on the elementary mathematics content and materials. Emphasis is on developing an understanding of concepts and skills through discovery. To be taken with 510, 511, 512, 513. Prerequisite: CUIN 102. (F;S)
- CUIN 515. Methods of Teaching** **Credit 2 (2-0)**  
 This course emphasizes an interdisciplinary approach to the course of study in various subject-matter areas. It is designed to enable students to observe master teachers and to test methods, materials, resources and techniques to facilitate student learning. This course should be taken in conjunction with the content courses preceding the student-teaching experience. Students are required to participate in a minimum of 60 hours per week in a classroom setting. Prerequisite: CUIN 102. (F;S)
- CUIN 519. Preschool Materials, Methods and Practicum** **Credit 3(2-2)**  
 This course examines methods, materials and program planning for the preschool child. There will be directed observation and participation in an established pre-school program such as a day care center, nursery or kindergarten. (F;S;SS)
- CUIN 525. Methods of Teaching Art\*** **Credit 3(3-0)**  
 This course is a study of aims, objectives, methods and techniques of art teaching in the modern schools. Special attention given to planning courses of material and correlation. Required of those wishing to qualify as art teachers. Prerequisites: 30 hours of Art and 15 hours of education and psychology. (F;S)
- CUIN 526. Methods of Teaching English\*** **Credit 3(3-0)**  
 This course is a study of materials and methods of teaching English in the high school. Required of those planning to teach English. Prerequisites: English 450, 430; 24 additional hours of English courses above English 100 and 15 semester hours in education and psychology. (F;S)
- CUIN 527. Methods of Teaching Foreign Languages\*** **Credit 3(3-0)**  
 This course is a study of the problems and strategies in teaching foreign languages. Special attention given to the matter of classroom aids, equipment, etc. Required of those students planning to teach the subject. Prerequisites: 27 hours of French and 15 semester hours of education and psychology. (F;S;SS)
- CUIN 528. Methods of Teaching Home Economics\*** **Credit 3(3-0)**  
 This course is a study of the objectives, methods, and techniques necessary for teaching vocational home economics on the secondary level. (F;S)
- CUIN 529. Methods of Teaching Mathematics\*** **Credit 3(3-0)**  
 This course is an evaluation of subject matter, materials, methods, and techniques and objectives in the teaching of mathematics in the junior and senior high schools. Required of those planning to teach the subject. Prerequisites: 30 hours of mathematics and 15 hours of education and psychology. (F;S)
- CUIN 530. Public School Music Methods\*** **Credit 2(2-0)**  
 This course is a comprehensive study of materials and methods in the teaching of public school music. (F;S)
- CUIN 531. Vocal Methods and Materials\*** **Credit 3(3-0)**  
 The teaching of vocal music in the public schools and vocal literature for vocal combinations in the public schools is studied in this course. (F;S)



**CUIN 532. Band Methods\*****Credit 3(3-0)**

This course is a study of the school band organization and administration. (F)

**CUIN 533. The Teaching of Physical Education\*****Credit 3(3-0)**

This course is a study of the teaching/learning process in health and physical education within the middle and secondary school. It emphasizes the planning, implementation and evaluation of health and physical education activities within the school setting. Prerequisites: Admission to Teacher Education and approval of the HPER chairperson. (F;S;SS)

**CUIN 534. The Teaching of Health Education\*****Credit 2(2-0)**

This course examines methods, materials and procedures for the teaching of health in the elementary and secondary schools. Field experiences will include: observation, and service as aides and assistants. Prerequisites: Health Education 220, 440, and 442; Zoology 469 and 560. (F;S;SS)

**CUIN 535. Methods of Teaching of Science\*****Credit 4(3-1)**

This course is a study of methods, materials and techniques of teaching biology, chemistry, physics, general science, and environmental science in the high school. Required of all those planning to teach in this field. Prerequisites: 27 hours of science and 15 semester hours of education and psychology. (F;S;SS)

**CUIN 536. Methods of Teaching Social Sciences\*****Credit 3(3-0)**

This course is a study of the techniques of social science instruction on the high school level. Required of those planning to teach the subject. Prerequisites: 27 hours of Social Studies and 15 semester hours of education and psychology. (F;S;SS)

**CUIN 539. Methods of Teaching Speech and Theatre\*****Credit 3(3-0)**

This course is a study of the aims, objectives, problems and difficulties experienced in teaching speech in the modern school. Special attention is given to the organization and coordination of both speech and theatre curriculums, to planning courses of study, its presentation, and to the selection of materials and equipment required of all speech and Theatre Education majors. Prerequisites: 27 hours of Speech and 15 hours of Education and Psychology. (F;S;SS)

**CUIN 542. Children's Literature and Instructional Media****Credit 3(3-0)**

This course provides multimedia approaches to literature for children with emphasis on the integration of literature across the curriculum. (F;S;SS)

**CUIN 543. Educational Media****Credit 3(3-0)**

This course deals with the integration of educational media in the classroom. Candidates will examine how to promote effective teaching through the use of technology in the curriculum. (F;S;SS)

**CUIN 544. Diagnostic-Prescriptive Reading Instruction in Elementary Education****Credit 3(3-0)**

The study of diagnostic instruments, formal and informal testing procedures, report writing, and development of educational prescriptions. The candidates will work with individual students or small groups identified as problem readers. (F;S;SS)

**CUIN 556. Curriculum and Methods in Literature, Language Arts, and Social Studies in Early Childhood Education****Credit 3(2-2)**

This course is the study of basic principles underlying the social studies and language arts curriculum, children's literature, appropriate materials and methods for kindergarten-primary grades. Concepts and skills relating to the scope and importance of social studies and language arts in the total program will be developed. There will also be laboratory and observation experiences. (F;S;SS)



**CUIN 557. Curriculum and Methods in Science and Mathematics in Early Childhood Education Credit 3(2-2)**

This course is a study of the underlying basic principles are underlying the science and mathematics curriculum. Consideration of appropriate materials and methods for kindergarten through primary grades will be given. Concepts and skills relating to the scope and importance of science and mathematics in the schools programs will be developed. There will be simulated teaching experiences. (F;S;SS)

**CUIN 558. Student Teaching and Seminar in Early Childhood Education Credit 6(2-8)**

This course includes the observation and study of the guided teaching experiences in the kindergarten through grade three to include ninety or more clock hours of actual teaching. The study of the application and practice of methods, techniques and materials of instruction in a real classroom situation under supervision, includes purposeful observation, organization of teaching materials, participation in other activities will be included. (F;S;SS)

**CUIN 559. Student Teaching in the Elementary School Credit 12(0-24)**

This course provides candidates observation and supervised teaching experiences in the elementary grades (K-6). It includes the study of application and practice of methods, techniques and materials of instruction in a classroom situation will be demonstrated and observed. Students must be admitted to the Teacher Education Program. Students will meet periodically during student teaching for purposes of group discussion. This is a full semester experience. (F;S)

**CUIN-560. Observation and Student Teaching\* Credit 6(2-8)**

This course examines the application and practice of methods, techniques, and materials on instruction in a real classroom situation under supervision, includes purposeful observation; organization of teaching materials; participation in other activities which will aid in developing a teacher (Guidance activities, child accounting, cocurricular activities, parent-teacher associations, teachers' meetings), and ninety or more clock hours of actual teaching. Prerequisites: Overall GPA of 2.80 in both the professional and major components and approval of major department. (F;S)

**CUIN 562. Seminar in Elementary Education\* Credit 3(1-0)**

A consideration of selected topics and current trends in the field of elementary education. Topics differ in response to current interests, issues and research findings. Candidates will participate in-group sessions during the student teaching experience. The sessions may be conducted at a selected school or on campus. (F;S;SS)

**CUIN 611. Utilization of Education Media Credit 3(2-2)**

Applies basic concept to problems in teaching and learning with school and adult audiences. Relates philosophical and psychological bases of communications to teaching. Discusses the role of communications in problem-solving, attitude formation, and teaching. Methods of selecting and using educational media materials effectively in teaching. Experience in operating equipment, basic techniques in media preparation. Practice in planning and presenting a session. Prerequisite: CUIN 102. (F;S;SS)

**CUIN 613. Media and Literature for Children Credit 3(3-0)**

This course will entail a study of children's literature with emphasis on aids and criteria for selection of books and other materials for preschool through late childhood ages; story-telling, and an investigation of reading interests. Prerequisite: CUIN 102. (F;S;SS)

**CUIN 629. Classroom Diagnosis in Reading Instruction Credit 3(3-0)**

Methods, techniques and materials used in the diagnosis of reading problems in the kindergarten-primary area through the intermediate level. Attention upon the pupil and the interpretation of physiological, psychological, sociological, and educational factors affecting learning to read. Opportunity for identification, analysis, interpretation on, and strategies for fulfilling the reading needs of all pupils. Prerequisite: CUIN 511. (F;S)

**CUIN 632. Basic Technology Literacy for K-12 Educators** **Credit 3(3-0)**  
This course provides instruction in basic computer literacy skills and classroom integration for K- 12 educators. The instruction is designed to meet the North Carolina Department of Public Instruction's requirements for basic level computer competencies for public school teachers. Topics include word processing, spreadsheet usage, database design and management, teacher utilities, and fundamentals of modern computing. (F;S;SS)

**CUIN 641. Teaching and Learning in a Multicultural Classroom** **Credit 3(3-0)**  
The course focuses on curricular and pedagogical practices that embrace the intellectual, emotional, and contextual realities of a multicultural classroom, Holistic teaching methods that stress an inclusive, democratic, cooperative and multicultural environment consistent with a social justice framework will be emphasized in this course. (F;S;SS)

## **COURSE DESCRIPTIONS IN SPECIAL EDUCATION**

**SPED 350. Introduction to Exceptional Children** **Credit 3(3-0)**  
An overview of the educational needs of exceptional or "different" students in the regular classroom situation. Emphasis is placed on classroom techniques known to be most helpful to low incidence students having hearing losses, speech disorders, visual problems, and high incidence disabilities with behavioral and learning disabilities. (F;S;SS)

**SPED 325. Orientation to Special Education** **Credit 1(1-0)**  
This orientation course seeks to expose the freshman special education major to the diverse exceptional students and the settings in which they are served in the public schools. (F;S;SS)

**SPED 351. Introduction to Learning Disabilities** **Credit 3(3-1)**  
The identification and education of children and youth with learning disabilities, including teaching strategies, theories, programs and materials. (Field Experience) (F;S;SS)

**SPED 352. Introduction to Emotional Disturbance** **Credit 3(3-0)**  
An introductory course in the education of students with behavioral and emotional disorders. Psychological, sociological, and educational implications will be emphasized. (F;S;SS)

**SPED 353. Introduction to Mental Retardation** **Credit 3(3-0)**  
A study of the diagnosis and classification of mental retardation, including historical development, curriculum, and theoretical strategies. (F;S;SS)

**SPED 439. Behavior Management of Exceptional Children and Youth** **Credit 3(3-0)**  
A survey of relevant research and techniques that are applicable for positive behavior support systems in learning situations for exceptional children and youth. (F;S;SS)

**SPED 441. Teacher-Parent Community Resources for Exceptional Children** **Credit 2(2-0)**  
A survey of the psychological and sociological factors affecting exceptional children and their families as well as techniques used in working and communicating with families of exceptional children and community resources. (F;S;SS)

**SPED 442. Research Seminar** **Credit 1(1-0)**  
Students will learn basic research skills and APA writing format. A mini collaborative research project will be conducted, analyzed, and written for journal submission. (F;S;SS)

**SPED 536. Educational Assessment and Curriculum Development for the Exceptional Infant and Young Child\*** **Credit 3(3-1)**  
Evaluation, methods and curriculum used with the very young and preschool child with mild and moderate disabilities. (Field Experience) (F;S;SS)

**SPED 545. Special Education Seminar** **Credit 2(2-0)**  
This course is designed for the participant to examine the major components of those teaching acts which research has associated with effectiveness in the classroom. Instructional practices

and student experiences that are consistently productive in the classroom of our most effective teachers will be presented. (F;S;SS)

**SPED 546. Occupational Orientation and Training for the  
Exceptional Youth**

**Credit 2(2-0)**

Background development of on-the-job training and transition planning, covering aspects of occupational adjustments in terms of practical academic experiences and employment opportunities. (F;S;SS)

**SPED 548. Diagnostic Prescriptive Teaching**

**Credit 3(3-0)**

This course will provide a study of the diagnostic prescriptive model of special education with emphasis on assessment and writing individualized programs for exceptional children and youth. Students will develop a knowledge base and application skills in identification, referral, assessment, and placement of students with mild/moderate disabilities. (F;S;SS)

**SPED 564. Materials, Methods, and Problems in Teaching the Special  
Needs Child**

**Credit 3(3-0)**

This course is designed to present an array of teaching methods and materials which are particularly useful for students with learning and behavioral problems. Basic organization of programs, materials, equipment, instructional planning, techniques, and strategies for the education of children and youth with special needs. (Field Experience) (F;S;SS)

**SPED 565. Teaching Exceptional Strategies for Students in  
Inclusive Settings**

**Credit 3(3-0)**

This course is designed for both the general and special educator working with special needs students in the inclusive classroom. Effective instructional strategies for diverse learners, consultation and collaborative problem solving techniques, and the cooperative teaching model will be explored. (F;S;SS)

**SPED 660. Introduction to Exceptional Children**

**Credit 3(3-0)**

A survey of children and youth with special needs focusing on historical and current treatment. Emphasis will be on psychological, sociological, physiological, and educational needs of special needs children. (F;S;SS)

**SPED 661. Psychology of the Exceptional Child**

**Credit 3(3-0)**

An analysis of psychological factors affecting identification and development of individuals with high and low incidence disabilities. (F;S;SS)

**SPED 662. Mental Deficiency**

**Credit 3(3-0)**

An overview of mental retardation across the life span including causes, characteristics of at various functioning levels, testing, classification, and legal issues, and current "best practices" for school and community inclusion. (F;S;SS)

**SPED 663. Measurement and Evaluation in Special Education**

**Credit 3(3-0)**

The selection, administration, and interpretation of individual tests; intensive study of problems in testing exceptional students. (F;S;SS)

**SPED 667. Specific Learning Disabilities**

**Credit 3(3-0)**

This course will address specific learning problems associated with reading, writing, language, cognition, perception, attention, mathematics, social and emotional disabilities. (F;S;SS)

**SPED 668. Children & Youth with Behavioral Disorders**

**Credit 3(3-0)**

A survey of various behavioral disorders including causes, characteristics, classification and legal issues, and interventions designed to permit functioning in least restrictive school and community environments. (F;S;SS)



## DIRECTORY OF FACULTY

- David Boger** ..... **Professor**  
B.S., Livingston College; M.S., New Mexico Highlands University; Ph.D., University of New Mexico
- Carlous Caple** ..... **Assistant Professor**  
B.A., M.A.Ed., North Carolina Central University; Ed.D., North Carolina State University
- Elizabeth Jane Davis-Seaver** ..... **Associate Professor**  
B.A., Duke University; M.Ed., University of Virginia; Ph.D., University of North Carolina at Greensboro
- Karen D. Guy** ..... **Assistant Professor**  
B.S., North Carolina A&T State University; M.Ed., North Carolina Central University; Ed.D., University of North Dakota
- Pamela I. Hunter** ..... **Associate Professor**  
B.A., Livingston College; M.Ed., University of North Carolina at Greensboro; Ph.D., Ohio State University;
- Muktha Jost** ..... **Assistant Professor**  
B.A., Madras University; M.S., University of Kansas; Ph.D., Iowa State University;
- Cathy Kea** ..... **Associate Professor**  
B.A., North Carolina Central University; M.S., University of Wisconsin-LaCrosse; Ph.D., University of Kansas
- Dorothy D. Leflore**..... **Associate Professor and Chairperson**  
B.S., Mississippi Valley State University; M.S., University of Oregon; Ph.D., University of Oregon
- D. Sue Massey** ..... **Adjunct Assistant Professor**  
B.A. Colorado Christian University; M.Ed., Ph.D., University of North Carolina at Greensboro
- Stephen McCary-Henderson** ..... **Adjunct Assistant Professor**  
B.S., North Carolina A&T State University; M.Ed. University of Southern Mississippi; Ph.D., Union Institute and University
- Marshena McCoy-Williams** ..... **Assistant Professor**  
B.A., Boston University; M.Ed., Ed.D., University of Massachusetts at Amherst
- Larry Powers** ..... **Associate Dean and Associate Professor**  
B.S., M.Ed., Tuskegee University; Ph.D., Michigan State University
- Earnestine Psalmonds** ..... **Professor**  
B.S., M.Ed., Tuskegee University; Ph.D., Georgia State University
- Thomas J. Smith** ..... **Assistant Professor**  
B.A., Manchester College; M.S., Indiana University; Ph.D., University of South Carolina
- Karen Smith-Gratto** ..... **Associate Professor**  
B.A., Christopher Newport College; M.A., Ph.D., University of New Orleans
- Lelia L. Vickers** ..... **Dean and Professor**  
B.A., Miles College; M.A., Atlanta University; Ph.D., Duke University
- Dawn C. Waegerle** ..... **Assistant Professor**  
B.A., M.A., Oral Roberts University; Ed.D. College of Williams and Mary



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## Department of Health, Physical Education and Recreation

<http://www.ncat.edu/~schofed/>

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**Deborah J. Callaway, Chairperson**

### OBJECTIVES

The Department of Health, Physical Education and Recreation will provide the following:

1. Necessary preparation for students planning careers as teachers of K-12 physical education, recreation administrators, fitness managers and athletic coaches.
2. Specialization in teacher education/administration, applied human performance and adapted physical education at the graduate level.
3. Instruction in a wide variety of activities to meet the needs and interests of all students.
4. Recreation venues for students and the university community.
5. Student experiences which will enhance a strong self-concept, emotional stability and social skills for positive human relationships.
6. Learning experiences that utilize instructional technology.
7. Encouragement of students' active involvement and participation in professional activities both at the state and national levels.

### DEGREES OFFERED

Health and Physical Education (Teaching) – Bachelor of Science

Health and Physical Education (Fitness/Wellness Management) – Bachelor of Science

Recreation Administration – Bachelor of Science

Health and Physical Education – Master of Science\*

*\*See the Graduate School Bulletin*

### GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree program in the Department of Health, Physical Education and Recreation is based upon the general admission requirements of the University. Formal admission to the Teacher Education Program begins at the completion of the sophomore year and the general studies requirements. Physical Education majors must meet each of the criteria for admission to the Teacher Education Program.

### DEPARTMENTAL REQUIREMENTS

Physical Education Teaching Majors must have the approval of his/her advisor and the department chairperson prior to admission to the Teacher Education block.

Teacher Education students must take the Praxis I (Pre-professional Skills Tests) (PPST) or the Computer-Based Tests (CBT) in reading, writing and mathematics. For licensure, students must take the Praxis II (Specialty Area or Subject Assessment Tests) and have a minimum cumulative 2.80 GPA prior to student teaching. Students must attain the passing scores on these respective tests as established by the State Board of Education.

Physical Education teaching majors are required to complete a 24-hour second major in a basic academic discipline. The second concentration options are Art, Biology, English, French, History, Mathematics, Psychology, Sociology, Spanish and Interdisciplinary .

Fitness/Wellness Management majors are required to complete 24-hours in Business Administration courses.

Recreation Administration majors are required to complete 128 semester hours and a minimum cumulative 2.00 GPA.

All “D’s” and “F’s” received in major courses and professional courses must be repeated.

**CAREER OPPORTUNITIES**

The potential job market for Health and Physical Education majors appears to be promising for the persons who have equipped themselves with competencies that will give strength in areas allied to health and physical education. The addition of the second major will also afford majors the opportunity to become more marketable in other teaching disciplines and fitness professions.

The potential for recreation positions is also growing rapidly. The promotion and growth of leisure activities are major factors that influence the quality of life and economic development.

**REQUIRED MAJOR COURSES FOR HEALTH AND PHYSICAL EDUCATION  
(TEACHING)**

PHED 101	PHED 350	PHED 470
PHED 105	PHED 440	PHED 570
PHED 240	PHED 445	PHED 520
PHED 231	PHED 462	PHED 563
PHED 200	PHED 442	PHED 569
PHED 271	PHED 566	PHED 533
PHED 272	PHED 475	

**CURRICULUM GUIDE FOR HEALTH AND PHYSICAL EDUCATION  
(TEACHING)**

**FRESHMAN YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101 or above	3	MATH 102 or above	3
HIST 100/204 (African American)	3	HIST (Global Studies)	3
CUIN 102	2	BIOL 100	4
PHED 101	1	PHED 240	2
PHED 105	1	PHED 231	2
2 <sup>nd</sup> Concentration	<u>3</u>		17
	16		

**SOPHOMORE YEAR**

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities	3	Humanities	3
PSYC 320	3	CUIN 301	2
SPCH 250	3	PHED 272	2
PHED 200	2	PHED 350	2
PHED 271	2	BIOL 361	4
Second Concentration	<u>3</u>	Second Concentration	<u>3</u>
	16		16

*Benchmark: Students must pass Praxis I and be admitted to the Teacher Education Program. Students must maintain a 2.8 GPA.*

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 400	3	PHED 442	2
PHED 440	2	PHED 475	3
PHED 445	3	PHED 470	3
PHED 462	3	PHED 570	3
PHED 566	2	Second Concentration	3
Second Concentration	<u>3</u>	Second Concentration	<u>3</u>
	16		17

*Benchmark: Students must pass the Specialty Area of Praxis II before Student Teaching. Student must maintain a 2.8 GPA.*

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CUIN 500	3	CUIN 560	12
PHED 520	3	CUIN 624	<u>3</u>
CUIN 533	3		15
PHED 563	3		
PHED 569	<u>3</u>		
	15		

Total Credit Hours: 128

## REQUIRED MAJOR COURSE FOR HEALTH AND PHYSICAL EDUCATION

### (Fitness/Wellness Management)

PHED 101	PHED 231	PHED 475
PHED 200	PHED 350	PHED 470
PHED 240	PHED 440	PHED 570
PHED 105	PHED 400	PHED 520
PHED 201	PHED 301	PHED 563
PHED 271	PHED 401	PHED 566
PHED 202	PHED 442	PHED 569
PHED 203	PHED 445	PHED 590
PHED 204		

## CURRICULUM GUIDE FOR HEALTH AND PHYSICAL EDUCATION

### (Fitness/Wellness Management)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101 or above	3	MATH 102 or above	3
HIST (African American)	3	HIST (Global Studies)	3
PHED 101	1	BIOL 100	4
PHED 200	2	PHED 240	2
Second Concentration	<u>3</u>	PHED 105	<u>1</u>
	15		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities	3	Humanities	3
PSYC 320	3	PHED 202	2
SPCH 250	3	PHED 203	2
PHED 201	2	PHED 204	2
PHED 271	2	PHED 231	2
Second Concentration	<u>3</u>	PHED 350	2
	16	BIOL 361	4
			17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 337	3	PHED 301	2
PHED 300	2	PHED 401	3
PHED 440	2	PHED 442	2
PHED 445	3	PHED 475	3
PHED 400	3	PHED 470	3
Second Concentration	<u>3</u>	PHED 570	<u>3</u>
	16		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHED 520	3	PHED 590	6
PHED 563	3	Second Concentration	3
PHED 566	2	Second Concentration	3
PHED 569	3	Second Concentration	<u>3</u>
Second Concentration	3		15
Second Concentration	<u>3</u>		
	17		

Total Credit Hours: 128

## COURSE DESCRIPTIONS IN HEALTH AND PHYSICAL EDUCATION

### **PHED 101. Health and Skill Related Physical Fitness** **Credit 1(0-2)**

This course is designed to study the components and scientific principles of health and skill-related physical fitness as they relate to wellness and lifetime fitness. It includes assessment activities designed to improve physical fitness. (F;S)

### **PHED 103. Introduction to Lifetime Physical Fitness** **Credit 1(0-2)**

This course provides an introduction to the foundations of lifetime physical fitness and its related activities. (DEMAND)

### **PHED 104. Weight Training** **Credit 1(0-2)**

This course introduces the student to weight training with emphasis on principles, techniques and development of individual programs. (DEMAND)

### **PHED 105. Beginning Swimming** **Credit 1(0-2)**

This course teaches students the beginning skills in swimming necessary to meet American Red Cross Level Three standards. (DEMAND)

### **PHED 107. Racquetball** **Credit 1(0-2)**

This course is designed to offer the student an opportunity to develop performance skills, an understanding of rules and strategies, and an appreciation for racquetball which can be enjoyed as a lifetime activity. (DEMAND)

### **PHED 108. Beginning Springboard Diving** **Credit 1(0-2)**

This course introduces the student to the basic skills, knowledge and mechanics of springboard diving. (DEMAND)

### **PHED 109. Fundamentals of Team Sports** **Credit 1(0-2)**

This course seeks to develop an understanding of the values and the logic behind exercise and sports activity and regular habits of exercise, to determine the physical fitness needs of the student with the nature, basic rules, techniques and skills of a wide variety of popular American sports and guide him into activities which will be of most interest and benefit him now and in the future. (DEMAND)

### **PHED 110. Aerobic Training** **Credit 1(0-2)**

This course emphasizes the improvement of cardiovascular fitness through various forms of aerobic activity. (DEMAND)



- PHED 111. Fundamentals of Gymnastics** **Credit 1(0-2)**  
 In this course, students will develop an understanding of the basic skills and knowledge in the olympic-gymnastic events through a performance oriented experience. Students will perform on the vault, balance beam, parallel bars, horizontal bar, side horse, rings and floor exercise. The course provides a performance oriented gymnastic experience. **(DEMAND)**
- PHED 112. Fundamentals of Dance** **Credit 1(0-2)**  
 In this course, students will develop an understanding of the following concepts: Kinesthetic awareness of how body movement is controlled, and the elimination of muscular tension. **(DEMAND)**
- PHED 113. Beginning Tennis** **Credit 1(0-2)**  
 This course is a study of the basic skills and knowledge of tennis. **(DEMAND)**
- PHED 114. Beginning Golf** **Credit 1(0-2)**  
 This course is a study of the basic skills and knowledge of golf. **(DEMAND)**
- PHED 115. Beginning Bowling** **Credit 1(0-2)**  
 This course is a study of the basic skills and knowledge of bowling. **(DEMAND)**
- PHED 116. Adapted Physical Activity** **Credit 1(0-2)**  
 This course includes special activities for those students whose physical examination shows that they are unable to participate in the regular physical education program. **(DEMAND)**
- PHED 117. Beginning Badminton** **Credit 1(0-2)**  
 This course is a study of the basic skills and knowledge of badminton. **(DEMAND)**
- PHED 118. Water Aerobics** **Credit 1(0-2)**  
 This course is a physical fitness course designed to develop cardiovascular endurance, muscular strength, endurance and flexibility via exercises in the swimming pool. Swimming skills are not required. **(DEMAND)**
- PHED 120. Beginning Sailing** **Credit 1(0-2)**  
 This course is designed to teach students the basic skills of dinghy sailing as outlined by United States Sailing and the American Red Cross. **(DEMAND)**
- PHED 200. Personal Health** **Credit 2(2-0)**  
 This course is designed to study personal health needs and problems. It emphasizes the acquisition of health knowledge and skills needed to critically analyze and evaluate health practices. **(F;S;SS)**
- PHED 201. Physical Fitness Training I** **Credit 2(0-4)**  
 This course emphasizes the development and maintenance of health-related physical fitness. The training regimen includes cardiovascular endurance, muscular strength and endurance, muscular flexibility and body composition. **(F)**
- PHED 202. Advanced Physical Fitness Training** **Credit 2(0-4)**  
 This course emphasizes the development and maintenance of health-related physical fitness at an advanced level. Pre-requisite: PHED 201 or consent of instructor. **(S)**
- PHED 203. Weight Management** **Credit 2(1-2)**  
 This course is a study of the principles and applications of proper weight management. It includes assessment, physiological and psychological aspects of weight control, and activities related to weight management. **(S)**
- PHED 204. Stress Management** **Credit 2(1-2)**  
 This course is a study of stress and its impact on health, fitness and wellness including the theories of intervention, principles of stress resilience and methods of eliciting the relaxation response. **(S)**

**PHED 205. Intermediate Swimming****Credit 1(0-2)**

This course teaches the student intermediate/advanced swimming skills necessary to meet American Red Cross Level Five standards. Prerequisite: PHED 105 or consent of instructor. (F;S;SS)

**PHED 207. Intermediate Racquetball****Credit 1(0-2)**

This course teaches the student intermediate level racquetball skills, techniques and strategies. Prerequisite: PHED 107 or consent of instructor. (DEMAND)

**PHED 213. Intermediate Tennis****Credit 1(0-2)**

This course teaches intermediate level tennis skills, techniques and strategies. Prerequisite: PHED 113 or consent of instructor. (DEMAND)

**PHED 214. Intermediate Golf****Credit 1(0-2)**

This course teaches intermediate level golf skills, techniques and strategies. Prerequisite: PHED 114 or consent of instructor. (DEMAND)

**PHED 215. Intermediate Bowling****Credit 1(0-2)**

This course teaches intermediate level bowling skills, techniques and strategies. Prerequisite: PHED 115 or consent of instructor. (DEMAND)

**PHED 220. Community Health****Credit 2(2-0)**

This course is an introductory study of environmental factors which affect health. Emphasis will be placed upon the health of the group rather than that of the individual. Consumer health, community resources for health and prevention and control of disease through organized community efforts will be stressed. (S)

**PHED 229. Movement and Dance****Credit 1(0-2)**

This course is designed to study basic locomotor and axial movements in dance. It includes group problem solving utilizing the elements of time, space and force to create dance works. (DEMAND)

**PHED 231. Developmental Movement and Dance****Credit 2(1-3)**

This course is designed to study basic locomotor and axial movements. It includes elements of time, space and force to create dance works. Students will also study folk, square, social and aerobic dance. (DEMAND)

**PHED 234. Basketball, Field Hockey, and Softball****Credit 1(0-2)**

This course is designed to study the basic skills and knowledge of basketball, field hockey and softball. It includes the history, terminology, skill techniques, strategies and knowledge of rules and officiating. (DEMAND)

**PHED 235. Flag Football and Basketball****Credit 1(0-2)**

This course is designed to study the basic skills and knowledge of basketball, field hockey and softball. It includes the history, terminology, skill techniques, strategies and knowledge of rules and officiating. (DEMAND)

**PHED 237. Group Games and Outdoor Leisure****Credit 1(0-2)**

This course is designed to study the basic skills and knowledge of group games and outdoor leisure pursuits. It includes group games suitable for the gym, playground and camps, and outdoor leisure pursuits such as camping, backpacking, frisbee, orienteering and canoeing. (DEMAND)

**PHED 238. Wrestling, Track and Field****Credit 1(0-2)**

This course is designed to study the basic skills and knowledge of wrestling, track and field. It includes the history, terminology, skill, techniques, strategies and knowledge of rules and officiating. (DEMAND)

**PHED 240. Foundations of Physical Education** **Credit 2(2-0)**

This course is designed to study the philosophical, historical, sociological, psychological and scientific foundations of physical education. (S)

**PHED 246. Tennis and Golf** **Credit 1(0-2)**

This course is designed to study the basic skills and knowledge of tennis and golf. It includes the history, terminology, skill techniques, strategies and knowledge of rules. (DEMAND)

**PHED 247. Recreational Games** **Credit 1(0-2)**

This course is designed to study the basic skills and knowledge of archery, badminton, croquet, deck tennis, horseshoes, handball/racquetball, modified bowling and table tennis. It includes the history, terminology, skill techniques, strategies and knowledge of rules. (DEMAND)

**PHED 251. Soccer and Volleyball** **Credit 1(0-2)**

This course is designed to study the basic skills and knowledge of soccer and knowledge of soccer and volleyball. It includes the history, terminology, skill techniques, strategies and knowledge of rules and officiating. (DEMAND)

**PHED 263. Rhythms** **Credit 1(0-2)**

This course examines suitable types of rhythmical activities for boys and men including fundamental movements, folk, tap, social dance and singing games. (DEMAND)

**PHED 270. Recreational/Group Games and Outdoor Leisure** **Credit 1(0-2)**

This course is a study of the basic skills and knowledge of group games suitable for the gym playground and camps; the recreational games of archery, badminton, croquet, deck tennis, frisbee, horseshoes, handball/racquetball, modified bowling and table tennis; and outdoor leisure pursuits such as camping, backpacking, orienteering and canoeing. Prerequisite: PHED majors only. (DEMAND)

**PHED 271. Sports I** **Credit 2(1-2)**

This course is a study of the knowledge, skills and teaching strategies for group games and recreational activities. Prerequisite: PHED majors only. (F)

**PHED 272. Sports II** **Credit 2(1-2)**

This course is a study of the teaching strategies for developing and evaluating skills of selected individual and team sports. It will include history, terminology, skill techniques, coaching strategies and knowledge of rules and officiating. Prerequisite: PHED majors only. (S)

**PHED 273. Sports III** **Credit 2(1-2)**

This course is a study of track and field, wrestling and intermediate swimming. It includes the history, terminology, skill techniques, strategies and knowledge of rules and officiating. Prerequisite: PHED majors only. (DEMAND)

**PHED 300. Fitness Facilities and Equipment** **Credit 2(2-0)**

This course is a study of the planning, design, use and maintenance of the facilities and equipment related to physical fitness and wellness. (F)

**PHED 301. Fitness and Aging** **Credit 2(2-0)**

This course will examine the relationship between physical activity and the aging process; it will also focus on the impact of physical activity on the physiological, psychological and social well being of aging adults. (S)

**PHED 310. Movement Activities for the Elementary Classroom Teacher** **Credit 2(1-2)**

This course is designed to provide elementary classroom teachers with competency in designing, teaching and evaluating appropriate physical education activities for various developmental levels. Emphasis is placed on body coordination and movement exploration, values of games and sports, and safety in the playground. Prerequisites: Elementary Education majors and sophomore standing. (F;S)



- PHED 333. Fundamentals of Athletic Training** **Credit 3(2-2)**  
This course is a study in the practical application of athletic training principles and theory. (DEMAND)
- PHED 350. Technology for Health, Physical Education & Recreation** **Credit 2(1-2)**  
This course is designed to introduce students to the use of technology as applied to HPER. It includes applications of field specific software and appropriate software to develop professional documents, presentations, databases, web pages and portfolios. National Education Technology Standards for Teachers will be addressed. Prerequisites: HPER majors only. (S)
- PHED 400. Field Experience I** **Credit 3(0-6)**  
This course will provide an introductory practical experience in applying theoretical knowledge and skills through assisting professionals in physical fitness/wellness programs. Prerequisite: Junior standing in the Fitness Management Program. (F)
- PHED 401. Field Experience II** **Credit 3(0-6)**  
This course will provide an advanced practical work experience in public or private physical/fitness/wellness programs. Prerequisite: PHED 400 (S)
- PHED 440. Advanced Hygiene and Principles of Health Education** **Credit 2(2-0)**  
This course includes a comprehensive review of health facts and scientific principles applicable to the prospective teacher, the school child, and the community. Fundamentals of health promotion in the school program are considered. Prerequisite: PHED 200. (F)
- PHED 442. First Aid and Safety** **Credit 2(1-2)**  
This course is designed to study emergency first aid leading to American Red Cross certification in Standard First Aid and Cardiopulmonary Resuscitation. It also identifies practices and behaviors that promote safety in the home, school and community. (F;S;SS)
- PHED 445. Kinesiology** **Credit 3(2-2)**  
This course is a scientific study of the mechanics and analysis of human movement, incorporating principles from the fields of physical education, anatomy, physiology and physics. Prerequisite: BIOL 361. (F)
- PHED 448. Gymnastics I** **Credit 2(2-0)**  
This course is designed to study basic skills, routines and knowledge of men's and women's gymnastics events. It includes the history, terminology, skill techniques, evaluation and gymnastic related games. (DEMAND)
- PHED 458. Lifeguard Training** **Credit 2(1-2)**  
This course provides students with aquatic skills and knowledge to meet American Red Cross Lifeguard Training. It includes American Red Cross certification in Standard First Aid. (DEMAND)
- PHED 459. Water Safety Instructor** **Credit 2(1-2)**  
This course provides students with skills and knowledge to meet American Red Cross standards for Water Safety Instructor. It includes American Red Cross certification in Health Services Education. (DEMAND)
- PHED 462. Teaching Physical Education in Grades K-5** **Credit 3(2-2)**  
This course is designed to study the developmental approach in teaching physical education for children in grades K-5. Emphasis is placed on concepts of motor development, methods, teaching styles, management, and evaluation. Prerequisite: HPER majors only in junior standing. (F)
- PHED 470. Theory and Practice of Sports** **Credit 3(1-2)**  
This course is a study of the theory and practice of team sports, individual sports and recreational games. It includes analysis of performance skills, teaching techniques, officiating and a clinical experience. Prerequisites: PHED 271 and 272. (F)



- PHED 475. Motor Learning and Control** **Credit 3(3-0)**  
 This course is a study of the theoretical and application-based constructs related to human motor behavior in terms of motor learning, control, skill acquisition and performance. The behavioral, cognitive and psycho-physiological approaches will be examined. Prerequisite: PHED 462 or permission of instructor. (S)
- PHED 471. Theory and Practice of Sports II** **Credit 2(1-2)**  
 This course is a study of the theory and practice of the team sports: basketball, field hockey, softball and the individual sports: tennis, golf, track and field, wrestling and swimming. It includes analysis of performance skills, teaching techniques, officiating and a clinical experience. Prerequisites: PHED 272 and 273. (DEMAND)
- PHED 520. Psychosocial Interactions of Human Movement** **Credit 3(3-0)**  
 (Formerly PHED 420)  
 This course is a study of current psychological and sociological theories and research as they affect human movement. It focuses on the psychology of the learner, participation, group processes, cultural diversity, aggression, motivation, self-perception and psychosocial growth and development. Prerequisite: PHED 475 or permission of instructor. (F)
- PHED 563. Teaching Methods in Adapted Physical Activity** **Credit 3(2-2)**  
 This course is designed to study various methods appropriate to teaching individuals with exceptional needs. Emphasis is placed on non-categorical program planning and implementation. Prerequisite: HPER and Special Education Majors in junior standing. A field experience is required. (F)
- PHED 564. Minor Problems in Health and Physical Education** **Credit 2(2-0)**  
 This course is designed primarily for seniors to provide them with an opportunity to investigate selected professional problems. (DEMAND)
- PHED 566. The Organization and Administration in Health and Physical Education** **Credit 2(2-0)**  
 This course is a study of effective planning, organization and management of health, physical education and recreation programs. It includes philosophy, management methods and techniques, curricular design and management of class and extracurricular activities. Prerequisites: PHED 240, 271 and 272. (F)
- PHED 569. Assessment and Evaluation in Physical Education and Recreation** **Credit 3(3-0)**  
 This course is a study of the applications of assessment, statistics and evaluation in Physical Education and Recreation. Focus is placed upon the selection, development, administration, interpretation, and evaluation of the results of teacher made and professional instruments. The use of assessment and evaluation in terms of grading and grading systems will also be addressed. Prerequisite: HPER majors in junior standing only. (F)
- PHED 570. Exercise Physiology** **Credit 3(3-0)**  
 This course provides theoretical and practical experience in studying physiological concepts as they apply to acute and chronic effects of exercise on humans. Prerequisites: PHED 445 and BIOL 361. (S)
- PHED 590. Fitness Management Internship** **Credit 6(0-12)**  
 This course will provide in-depth practical work experience with public or private physical fitness/wellness programs emphasizing the development of management skills. (SS)
- CUIN 320-533. The Teaching of Health and Physical Education** **Credit 3(3-0)**  
 This course is a study of the teaching/learning process in health and physical education within the middle and secondary school. It emphasizes the planning, implementation, and evaluation of health and physical education activities within the school setting. Prerequisites: Admission to Teacher Education and Approval of the HPER chairperson. (F;S)

## REQUIRED MAJOR COURSES FOR RECREATION ADMINISTRATION

REC 160	PHED 442	REC 409
PHED 101	REC 560	PHED 271
REC 302	PHED 566	REC 410
REC 260	REC 571	REC 463
PHED 200	REC 308	REC 465
PHED 105	PHED 350	REC 446
PHED 220	REC 464	REC 512 or REC 513
PHED 231	PHED 563	PHED 569
PHED 272		

## CURRICULUM GUIDE FOR RECREATION ADMINISTRATION

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 101 or above	3	MATH 102 or above	3
HIST 100/204 (African American)	3	HIST 101/205 (Global Studies)	3
BIOL 100	4	CHEM 100	3
REC 160	3	CHEM 110	1
PHED 101	<u>1</u>	SOCI 100	<u>3</u>
	17		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 200	3	ENGL 201	3
SPCH 250	3	SOCI 204	3
PSYC 320	3	PHED 220	2
REC 302	2	PHED 105	1
REC 260	3	PHED 231	2
PHED 200	<u>2</u>	REC 308	2
	16	PHED 272	2
		PHED 350	<u>2</u>
			17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
REC 464	3	REC 410	2
ART 454	3	REC 463	3
ECON 201	3	REC 465	3
PHED 563	3	SOCI 203	3
REC 409	2	POLI 210	3
PHED 271	<u>2</u>	PHED 442	<u>2</u>
	16		16

### SUMMER JUNIOR YEAR

REC 512 or 513                      6 hrs.

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHED 569	3	PSYC 420	3
PHED 566	2	REC 560	3
REC 571	3	REC 446	3
BUAD 422	3	BUAD 461	<u>3</u>
Electives	<u>1</u>		12
	12		

Total Credit Hours: 128

## **COURSE DESCRIPTIONS IN RECREATION ADMINISTRATION**

### **REC 260. Community Recreation**

**Credit 3(3-0)**

This course is a study of city, state, and national organizations. Practice in the general principles and techniques in the organization and promotion of leisure activities for home, school, and community will be included. Field experience will include observations, service as aides and assistants. (F)

### **REC 302. Field Experience I (Formerly REC 402)**

**Credit 2(0-4)**

The first of four field experiences consist of 40 clock hours of on-the-job experience with an approved Voluntary Youth-Service Agency that offers recreation and leisure services as a part of its programs. The student works through the agency in a variety of divisions to learn in-depth operations of the agency and the jobs entailed. Students spend two to four hours per week during the semester working under the supervision of a faculty advisor and an agency supervisor. Hours of service and specific jobs assigned and performed must be documented on departmental forms provided. These forms are submitted to the faculty advisor every Friday before 4:00 p.m. (F)

### **REC 308. Field Experience II (Formerly REC 408)**

**Credit 2(0-4)**

This course is a continuation of knowledge and skill development of the recreation profession in a different agency. Students are assigned to a government agency involved in recreation and leisure service delivery. They are required to spend 40 hours during the semester working two to four hours per week under the guidance of a faculty advisor and the agency supervisor. Hours of service and activities/tasks assigned and undertaken during the week must be documented and submitted to the faculty advisor each Friday before 4:00 p.m. (S)

### **REC 409. Field Experience III (Formerly REC 509)**

**Credit 2(0-4)**

This section of the field experience is with a commercial/industry agency. It is designed to equip students with the knowledge and practical skills required to operate recreation and leisure service as a business venture. Students are assigned to an approved commercial/industrial recreation agency for one semester to understudy the entire operations and workings of the enterprise. Each student is required to offer 40 hours of service during the semester, working two to four hours a week under the supervision of a faculty advisor and agency supervisor. Students are required to document hours of work, details of assignments and any observations made during the week on forms provided by the department. These forms are submitted to the faculty advisor every Friday before 4:00 p.m. (F)

### **REC 410. Field Experience IV (Formerly REC 510)**

**Credit 2(0-4)**

This is the last of the four field experiences. Students are assigned to a school/education agency to understudy its recreation and leisure service programs. They are required to spend 40 clock hours in the semester, working two to four hours per week under the guidance of a faculty advisor and the agency supervisor. Hours of service, work schedules and details of activities/assignments undertaken during the week must be documented and submitted to the faculty advisor every Friday before 4:00 p.m. (S)

### **REC 446. Camp Administration**

**Credit 3(3-0)**

This course examines the organization and administration of camp activities. Students will also program camping activities that will apply to all ages and both sexes. (S)

### **REC 463. Principles and Practices of Outdoor Recreation**

**Credit 3(2-2)**

This course examines the philosophy, organization administration and laboratory experiences in outdoor recreation. (S)

### **REC 464. Group Leadership**

**Credit 3(3-0)**

This course examines the techniques of group dynamics and methods of developing group leadership capabilities. (F)



**REC 465. Program Planning Recreation**

**Credit 3(3-0)**

This course includes an analysis of a recreation program. Emphasis is placed on objective, personnel and facilities. (S)

**REC 512. Recreation Internship**

**Credit 6(6-0)**

This supervised internship has been designed to allow students to acquire the knowledge competencies and skills necessary for a successful performance in the field. It is recognized that classroom studies are not efficient in and of themselves to prepare students for successful entry into the recreation profession. The opportunity to implement skills and knowledge in a practical situation is a necessary compliment to class experience. This internship is a minimum of ten weeks of 400 clock hours in a recreational setting. Students will complete the experience after the majority of the classroom work has been finished, which gives them the opportunity to apply learning gained through didactic studies. (SS)

**REC 513. Internship in Therapeutic Recreation**

**Credit 6(0-12)**

This course is designed to give students experiences in developing recreation therapy protocols, individualized treatment plans, assessments, in-service charting procedures and other matters pertaining to the treatment/care of individuals undergoing therapy. (SS)

**REC 560. Comprehensive Planning for Recreation**

**Credit 3(3-0)**

This course examines the process of developing comprehensive master plans for recreation areas. It includes the conservation and planning of recreational resources. (S)

**REC 571. Supervision of Recreation and Park Services**

**Credit 3(3-0)**

This course includes an analysis and investigation of supervision of employees involved in recreational services. (F)

**Advanced Undergraduate**

**PHED 651. Personal, School and Community Health Problems**

**Credit 3(3-0)**

This course provides a study of personal, school and community health problems and resources. Emphasis is placed on the control of communicable diseases, healthful school living and the development of individuals of the scientific attitude and a positive philosophy of healthful living. Field experiences will include observations, service as aides and assistants. (DEMAND)

**PHED 652. Methods and Materials in Health Education for Elementary and Secondary School Teachers**

**Credit 3(3-0)**

This course is a study of the fundamentals of the school's health program, pupil needs, methods, planning instruction, teaching techniques, selection and evaluation of materials for the elementary and secondary programs, and the use of the community resources. (DEMAND)

**DIRECTORY OF FACULTY**

- Paul K. Ankomah** .....

**Associate Professor**
- B.A., University of Ghana, Legon; M.S., Wilfrid Laurier University; Ph.D., Texas A&M University
- David Boger** .....

**Professor**
- B.S., Livingstone College; M.S., NM Highlands University; Ph.D., University of Mexico
- Deborah J. Callaway** .....

**Associate Professor and Chairperson**
- B.S., Virginia State College; M.Ed., Virginia Commonwealth University; Ed.D., Virginia Polytechnic Institute and State University
- Adam Chaskin** .....

**Lecturer**
- B.S., University of Michigan; M.S., Hamilton University



- Yongchul Chung** ..... **Assistant Professor**  
B.S., Seoul National University; M.S., Ph.D., University of North Carolina at Greensboro
- Teresa Dail** ..... **Instructor**  
B.S., Wake Forest University; M.S., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Greensboro
- Brennon M. David** ..... **Lecturer**  
B.S., Appalachian State University
- Tiffany Fuller** ..... **Instructor**  
B.S., M.S., North Carolina A&T State University
- Daren Hart** ..... **Lecturer**  
B.A., East Carolina
- Shawn Hendrix** ..... **Lecturer**  
B.S., High Point University
- Curtis Hunter** ..... **Lecturer**  
B.A., University of North Carolina at Chapel Hill
- Victor Karabin** ..... **Instructor**  
B.S., Westchester State College; M.S., University of Illinois
- Robert T. Larson** ..... **Associate Professor**  
B.S., M.S., Brigham Young University; Ph.D., University of New Mexico
- Diana Melton** ..... **Assistant Professor**  
B.S., Springfield College; M.S., Ed.D., University of North Carolina at Greensboro
- Gloria M. Palma** ..... **Associate Professor**  
B.S.E., University of the Philippines; M.S., Ph.D., Washington State University
- Kathy Roulhac** ..... **Lecturer**  
B.S., North Carolina A&T State University
- Todd Sherman** ..... **Assistant Professor**  
B.A., Kentucky Wesleyan College; M.S., Eastern Kentucky University; D.A., Middle Tennessee State University
- William Sutton** ..... **Lecturer**  
B.S., North Carolina A&T State University; M.E.Q. University of Maryland
- Brenda Swearingin** ..... **Instructor**  
B.S., M.S.; University of Arkansas
- Donald Vines** ..... **Part-Time Instructor**  
B.S., M.S., North Carolina A&T State University
- Richard Watkins** ..... **Instructor**  
B.S., High Point College; M.S., North Carolina A&T State University
- Daniel Webb** ..... **Assistant Professor**  
B.S., Coppin State College; M.S., University of Wisconsin; Ph.D., Ohio State University

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## SCHOOL OF TECHNOLOGY

<http://www.ncat.edu/~sot>

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### **Elazer J. Barnette, Dean**

The primary focus of the School of Technology is to prepare individuals who are uniquely proficient in the application of basic science and technology. Thus, faculty of the school are interested in what industry, business and education want and need. As a result, our goal is to educate the whole person. Students develop not only their technical skills but their personality, cooperativeness, innovativeness, concern for the organization, and communications skills. Graduates of the school are equipped to meet the new and emerging challenge of a modern high technological society.

Curriculum and programs of the school are continually reviewed by advisory groups associated with the various professions represented by the school. Based upon this input, the curriculum is reflective of what business, industry and education need.

Programs of the school that are designed to prepare individuals for industry are built upon a technical-management orientation. Thus, graduates pursue career opportunities in a variety of fields ranging from research and design to inspection, distribution and service. Graduates are employed as project managers, quality control engineers, operation officers, shift superintendents, employment managers, safety engineers, occupational health specialists, construction managers, loss prevention representatives, etc.

Several of the programs of the School are designed to prepare individuals for a variety of educational careers. Thus, graduates of the school are employed as technology education or industrial vocational education instructors at the secondary and post-secondary levels. In addition, many graduates of the education program are employed in the private and governmental sectors in a variety of occupational areas.

The specific objectives of the school are as follows:

1. To provide an environment which nurtures individual development and creativity through scholarly pursuits;
2. To provide a basic knowledge of management skills and problem solving techniques;
3. To develop scientific and technological proficiency through organized instruction and research;
4. To prepare persons to secure positions in industrial-technical training and teaching at the secondary and post-secondary level;
5. To prepare persons to secure positions of a technical-management nature in business, industry, and government; and
6. To provide advanced technological competencies and leadership in the utilization of computers in industry, business, and technical settings.

### **ACCREDITATION**

The undergraduate programs are as follows: construction management, electronics technology, graphic communication systems, manufacturing systems, and occupational safety and health and are accredited by the National Association of Industrial Technology (NAIT). Industrial Technology is a field of study designed to prepare technical and/or management oriented professionals for employment in business, industry, education, and government. The undergraduate and graduate programs in technology education and vocational industrial

education are accredited by the National Council For Accreditation of Teacher Education (NCATE) and approved by the State Department of Public Instruction (SDPI). The Technology Education program is also certified by the International Technology Education Association (ITEA).

### **DEGREES OFFERED**

Construction Management – Bachelor of Science  
Electronics Technology – Bachelor of Science  
Graphic Communication Systems – Bachelor of Science  
Manufacturing Systems – Bachelor of Science  
Occupational Safety and Health – Bachelor of Science  
Technology Education – Bachelor of Science  
Technology Education – Master of Science\*  
Industrial Technology – Master of Science\*

*\* See the Graduate School Bulletin*

### **GENERAL PROGRAM REQUIREMENTS**

Admission requirements for entering students in the School of Technology are the same as those for the University. Transfer students must have a 2.0 GPA overall. Requirements for graduation vary from department to department. Students are responsible for meeting all academic requirements for graduation established by both the University and their chosen department.

Community college and technical institute graduates as well as other transfer students may be admitted to undergraduate programs in construction management, electronics technology, graphic communication systems, manufacturing systems and vocational industrial education with advanced classification by submitting their credentials to the University Admissions Office. The school also has several 2+2 agreements with area community colleges. The maximum number of transfer credits allowed with the Associate Degree Program is 63 semester hours or approximately junior status.

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## **Department of Construction Management and Safety**

<http://www.ncat.edu/~sot/cms>

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**David Dillon, Chairperson**

### **OBJECTIVES**

The Department of Construction Management and Safety at North Carolina Agricultural and Technical State University prepares men and women in the scientific, managerial, and supervisory areas required in the programs of construction management and occupational safety and health.

The program in Construction Management (CM) emphasizes all areas of construction from the viewpoint of the contractor/constructor. This includes developing, planning, estimating, scheduling, managing, and supervising the construction of structures.

The program in Occupational Safety and Health (OSH) is concerned with the anticipation, recognition, evaluation and control of occupational safety and health hazards associated with mechanical systems, material handling, electrical systems, chemical processes, and illustrates controls through engineering revision, safeguarding and personal protective equipment.

### **DEGREES OFFERED**

Construction Management – Bachelor of Science

Occupational Safety and Health – Bachelor of Science

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree program in the Department of Construction Management and Safety is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

Students who desire to matriculate in the Department of Construction Management and Safety must have a strong background in math, science and communication skills. Some computer skills are also recommended.

All majors in the department are expected to maintain a minimum grade point average (G.P.A.) of 2.0. A minimum grade of "C" must be earned in all major courses.

Any student transferring to the Department of Construction Management and Safety from other disciplines must have a minimum of 2.0.

Students majoring in construction management or occupational safety and health must complete a minimum of 126 semester hours of University courses. Included in these 126 semester hours are major courses, which must be completed in order to receive the Bachelor of Science degree in the respective field.

### **ACCREDITATION**

The degree programs in construction management and occupational safety and health are accredited by the National Association of Industrial Technology.

The construction management degree program has received candidacy status by the American Council for Construction Education.



## CAREER OPPORTUNITIES

Graduates of our construction management and occupational safety and health program are very successful in gaining employment in industrial, governmental, and business as supervisors, managers, engineers, technical salespersons and researchers.

### REQUIRED MAJOR COURSES FOR CONSTRUCTION MANAGEMENT

CM 100	CM 310	CM 594
CM 150	CM 317	CM 596
CM 190	CM 318	CM 598
CM 214	CM 320	CM 600
CM 215	CM 410	CM 601
CM 216	CM 412	CM 650

### CURRICULUM GUIDE FOR CONSTRUCTION MANAGEMENT

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
CHEM 106/116	4	CM 190	4
CM 100	3	CM 214	3
CM 150	<u>3</u>	SPCH 250	<u>3</u>
	17		17

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 225/235	4	PHYS 226/236	4
CM 215	4	CM 216	4
CM 317	3	CM 310	3
CM 320	3	CM 318	4
GCS 292	<u>3</u>		<u>15</u>
	17		

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Social Science Elective <sup>1</sup>	3	PSYC 320	3
Humanities Elective	3	ECON 200	3
CM 412	3	ACCT 203	3
CM 594	4	CM 410	3
BUAD 422	<u>3</u>	PHED 200	<u>2</u>
	16		14

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 426	3	CM 598	4
CM 596	4	CM 601	3
CM 600	2	CM 650	3
Humanities Elective <sup>2</sup>	3	Electives	<u>5</u>
Social Science Elective <sup>1</sup>	<u>3</u>		15
	15		

Total Credit Hours: 126

### REQUIRED MAJOR COURSES FOR OCCUPATIONAL SAFETY AND HEALTH

OSH 201	OSH 413	OSH 516
OSH 210	OSH 414	OSH 632
OSH 312	OSH 416	OSH 672
OSH 411	OSH	

# CURRICULUM GUIDE FOR OCCUPATIONAL SAFETY AND HEALTH

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
OSH 201	<u>3</u>	OSH 210	3
	14	Social Science Elective <sup>1</sup>	<u>3</u>
			17

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 225	3	PHYS 226	3
PHYS 235	1	PHYS 236	1
MFG 191	3	GCS 292	3
OSH 312	3	OSH 411	3
BIOL 361	4	PHED 200	2
SPCH 250	<u>3</u>	CHEM 221	3
	17	CHEM 223	<u>2</u>
			17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
OSH 413	4	OSH 416	4
MATH 224	3	OSH 414	3
PSYC 445	3	Humanities Elective <sup>1</sup>	3
BUAD 422	3	BUAD 461	3
MFG 470	<u>3</u>	Social Science Elective <sup>1</sup>	<u>3</u>
	16		16

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
OSH 632	3	CM 320	3
OSH 516	3	OSH Elective	3
OSH Elective	3	OSH 513	3
Humanities Elective <sup>1</sup>	3	OSH 672	3
OSH CO-OP Elective	<u>3</u>	Free Elective	<u>2</u>
	15		14

Total Credit Hours: 126

<sup>1</sup> Students must complete three semester hours in African American Studies and three semester hours in Global Studies as outlined in the University Bulletin.

## COURSE DESCRIPTIONS IN CONSTRUCTION MANAGEMENT

### Undergraduate

#### **CM 100. Orientation to Construction Management** **Credit 3(2-3)**

This course will present an overview of the construction industry, career opportunities, types of construction, general construction processes, specifications, and related technology. (F)

#### **CM 150. Construction Documents** **Credit 3(2-3)**

This course deals with the analysis and interpretation of construction contract documents. Topics of discussion will include evaluation of different types of written contracts, architectural working drawings, shop drawings, general conditions, specifications, supplementary general conditions, bid proposal, addenda, and agreements. Special emphasis will be placed on case studies involving a variety of contracts. Also, computer applications in construction documents will be examined. (F)

**CM 190. Construction Materials****Credit 4(3-3)**

This course will provide a comprehensive overview of the structure, properties, and application of construction materials and their integration into building systems. The laboratory exercises will focus on construction materials, soils and concrete testing. The structure of the course will follow the format of the Construction Specification Institute (CSI). Prerequisite: CM 100. (S)

**CM 214. Construction Surveying****Credit 3(2-3)**

This course provides an introduction to surveying theories, principles, and practices. Methods of leveling, angle measurements, property survey, topographic and construction layout will be studied. Care and use of surveying instruments will be emphasized. Prerequisite: MATH 111. (S)

**CM 215. Residential Construction and Codes****Credit 4(3-3)**

The content of this course includes the principles of light frame construction foundations, framing, exterior finish and related areas of layout, estimating, materials procurement, and conventional and modular component systems. Special emphasis will be placed on applicable building codes, ordinances, and blueprint reading. Prerequisite: CM 190. (F)

**CM 216. Commercial/Industrial Construction Methods and Equipment****Credit 4(3-3)**

Principles of heavy construction methods and procedures will be studied. Current construction practices for industrial/commercial projects, site layout, foundations, structural systems, exterior and interior finishing, and equipment will be emphasized. Prerequisite: CM 215. (S)

**CM 310. Construction Structures I****Credit 3(2-2)**

This course will focus on analysis and evaluation of structural elements and systems and their integration into building design. Study of forces, force systems, building structural mechanics, statics, and strength of materials will be included. Prerequisites: PHYS 225/235 and CM 215. (S)

**CM 317. Construction Estimating****Credit 3(2-3)**

This course is designed to enable the student to gain competency in estimating the amount of materials, time, labor, and equipment required to complete construction projects. A practical approach is emphasized in the estimating process to simplify preparation of formal estimates. Prerequisites: Math 111 and CM 216. (F)

**CM 318. Advanced Construction Estimating****Credit 4(2-4)**

The focus of this course is on the general concepts of computer applications in construction estimating. Special emphasis will involve the utilization of selected commercial estimating software. A comprehensive estimating project is required for completion of the course. Prerequisite: CM 317. (F)

**CM 320. Construction Safety****Credit 3(3-0)**

This is a study and evaluation of OSHA standards and regulations as they relate to the construction industry. Safety requirements on various construction operations will be analyzed and discussed. Also, students will learn the principles of safety management, accident prevention, and safety program development methods. Prerequisite: Sophomore standing. (F;S;SS)

**CM 333. Construction Inspections and Codes****Credit 3(3-0)**

This course covers the basic principles and practices of professional construction inspection. Methods and techniques of visually inspecting construction work, analysis of contract documents, and applicable codes will be studied. Other topics of discussion will include code and contractual compliance, project monitoring, and inspection report procedures. (F;S;SS)

**CM 410. Construction Structures II****Credit 4(3-3)**

This course focuses on advanced structural principles and practices in construction. Topics of discussions will include analysis and design of structural elements and building systems such

as walls, floors, footings, foundations and roof truss systems; application of structural theories in the design of timber, steel and reinforced concrete members; and code requirements and specifications. Prerequisite: CM 310. (S)

**CM 412. Mechanical and Electrical Systems in Construction** **Credit 3(2-3)**

This course covers the basic principles and advanced practices in the selection, installation, operation, and maintenance of mechanical and electrical equipment for buildings. Topics include water supply systems, HVAC systems, electrical systems, and the applicable codes. Prerequisite: Junior standing. (F)

**CM 490. Human Relations in Construction** **Credit 3(3-0)**

This course provides a study of work place issues, which will aid the students in getting along with people on the job, in the community, and the home. The units of work in class will include ethics, rights, obligations, employee/employer responsibilities, and state and federal regulations. (F;S;SS)

**CM 497. Industrial Experience I** **Credit 3(3-0)**

Students must work in industry during one semester or summer (300 work-hours) in their major field and complete departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinator. (F;S;SS)

**CM 498. Industrial Experience II** **Credit 3(3-0)**

Students must work in industry during one semester or summer (300 work-hours) in their major field and complete departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinator. (F;S;SS)

**CM 570. Environmental Controls, AC and Heating Systems** **Credit 4(2-4)**

This course includes the study of principal equipment, design, and load calculations for cooling and heating layouts and controls employed in various types of systems. This course is augmented by a practical design problem. (F;S;SS)

**CM 571. Commercial Refrigeration, Heating and Ventilation** **Credit 4(2-4)**

This course is a study of steam systems, hot water systems, warm air systems and electrical systems used in heating buildings; load calculation for walk-in cooler and deep freezer and drinking water fountains; and special refrigerating devices and applications. (F;S;SS)

**CM 592. Project Management** **Credit 3(3-0)**

This is an introductory course in project management principles including the development of project management and organizational skills for technology, engineering and business applications. Other topics include materials management, computer applications, and ethical issues relevant to project management. (F;S;SS)

**CM 594. Construction Planning, Scheduling and Control** **Credit 4(3-3)**

This course will focus on actual planning, scheduling and controlling of construction projects. Students will define specific activities and work tasks, prepare work schedules, measure performance, and evaluate options. Students will learn to develop presentations of accurate and timely information by appropriate computer software. Prerequisite: CM 216. (F)

**CM 596. Construction Financial Management and Organization** **Credit 3(2-3)**

This course will provide students with skills in bookkeeping methods and financial analysis for constructors. Factors that impact on contractors' credit image will be discussed along with job management and tax planning. Prerequisite: ACCT 203. (F)

**CM 598. Construction Management (Formerly CM 413)** **Credit 4(3-3)**

This course covers the fundamental principles and practices of professional construction management. Relationships, duties and responsibilities of all parties involved are emphasized. Administration of complex construction projects including bidding, contracting, financing, organizing, coordinating and cost controlling functions and techniques will be covered. Appro-



prate contract administration software will be utilized. Prerequisites: CM 594 and CM 596. (S)

**CM 599. Independent Study** **Credit 3(3-0)**

The student selects a technical problem in his major area for special research and study in consultation with a faculty member in his area of interest. He will spend a minimum of six hours per week in library research or laboratory experimentation. A technical report in standard format will be required for completion and must be approved by two department faculty members. Prerequisite: Junior or senior standing. (F;S;SS)

**CM 600. Senior Seminar** **Credit 2(2-0)**

The seminar will address how to develop a comprehensive proposal for an actual construction project. Prerequisite: Senior standing. (F)

**CM 601. Senior Project** **Credit 3(3-0)**

A special project related to the construction industry is developed and implemented during the semester. Prerequisite: CM 600. (S)

**CM 603. Environmental Technology for Construction** **Credit 3(3-0)**

The environmental issues facing the construction industry are studied. Issues include site management, water supply, storm water management, sewage disposal, solid and hazardous waste management, air and noise pollution. Emphasis will be placed on local, state and federal standards that impact upon construction projects during each phase from design to completion. Prerequisite: Senior standing. (F;S;SS)

**CM 617. Independent Studies I** **Credit 3(3-0)**

Study is arranged on a special construction topic of interest to the student and faculty member, who will act as advisor. Consent of Instructor Required. (F;S;SS)

**CM 618. Independent Studies II** **Credit 3(3-0)**

Study is arranged on a special construction topic of interest to the student and faculty member, who will act as advisor. Consent of Instructor Required. (F;S;SS)

**CM 650. Construction Contracts and Law** **Credit 3(3-0)**

This course deals with contracts and the law in regard to construction company formation, methods of advertising, bidding process, contract formation and awards. Special emphasis is placed on law pertaining to the construction industry. Extensive case studies are reviewed. Prerequisite: CM 594 or equivalent. (F;S;SS)

**CM 675. Advanced Construction Planning and Scheduling** **Credit 3(2-3)**

The planning, scheduling, and organizing of construction projects to control time, costs and other resources are studied. Emphasis is on advanced preparation, analysis, and control of network schedules, using computers and a variety of software. Prerequisite: CM 594 or equivalent. (F;S;SS)

**CM 678. Real Estate and Land Development** **Credit 3(3-0)**

This course will provide an overview of land planning and development. A step-by-step description of the land development process and the relationship of each of the steps to the overall process will be the main focus. Topics to be covered include regulatory and financial elements as they relate to the development process such as zoning, floor area ratios, development bonus for amenities, zoning variances, building permits and inspections, real estate taxes, development districts, historic preservation, market feasibility studies, financial analysis, management, and leasing processes. Prerequisite: CM 216 or equivalent. (F;S;SS)

**CM 685. Graduate Internship I** **Credit 3(3-0)**

This course is an internship experience in construction-related industries. A special project is required. Consent of Graduate Advisor. (F;S;SS)

**CM 686. Graduate Internship II****Credit 3(3-0)**

This course is an internship experience in construction-related industries. A special project is required. Consent of Graduate Advisor. (F;S;SS)

**CM 690. Special Problems in Construction Management****Credit 3(3-0)**

Study is arranged on a special construction management topic of interest to students and faculty member who will act as advisor. Topics may be analytical and/or experimental and require independent study with a construction industry partner. Consent of Instructor and Construction Industry Partner. (F;S;SS)

**COURSE DESCRIPTIONS IN OCCUPATIONAL SAFETY AND HEALTH****Undergraduate****OSH 201. Introduction to Occupational Safety and Health****Credit 3(3-0)**

This course is an introduction to the standards of the Occupational Safety and Health Administration, and the job roles of the safety professional and the industrial hygienist. Course material shall include an introduction to quantitative problem solving and units of measure. An emphasis will be placed on the description of workplace environments. (F)

**OSH 210. Industrial Accident Prevention****Credit 3(3-0)**

This course is an introduction to the basic principles of accident prevention. An emphasis is placed on educational and training methods; the identification and elimination of physical, chemical, mechanical, electrical, and fall hazards; and consumer product safety. (S)

**OSH 230. Transportation of Hazardous Materials****Credit 3(2-2)**

This course identifies agencies of the U.S. Department of Transportation, defines hazardous materials, and explains requirements for transportation of hazardous materials by the various transportation modes. An emphasis will be placed on the Department of Transportation's standards found in the Code of Federal Regulations, the International Air Transport Association's (IATA) Dangerous Goods Regulation, and other regulations guides. Prerequisite: MATH 111 or consent of instructor. (F;S;SS)

**OSH 312. Accident Investigation Analysis and Records  
(Formerly OSH 212)****Credit 3(2-2)**

This course is an introduction to the basic principles of accident investigation including the importance, use, scope, and requirements of accident investigation. An emphasis is placed on casual analysis and the people, position, parts, and paper relevant to accident investigation. Topics of discussion also include record-keeping and reporting requirements of federal, state, and local agency standards. Prerequisite: OSH 211. (F)

**OSH 393. Safety Management****Credit 3(3-0)**

This course focuses on the industrial manager's role in preventing accidents, protecting workers' health and maintaining safety awareness in the workplace. Prerequisite: Junior standing (F;S;SS)

**OSH 411. Hazardous Materials for the Safety Professional****Credit 3(2-2)**

This course is an introduction to the principles of liquid and solid hazardous waste management. An emphasis is placed on pertinent federal regulatory legislation and environmental effects of released contaminants. Prerequisites: CHEM 107 or equivalent, BIOL 361, and OSH 312. (S)

**OSH 413. Industrial Hygiene I****Credit 4(3-3)**

This course is an overview of the principles of industrial hygiene. An emphasis is placed on the quantitative evaluation of physical and chemical work-place hazards and pertinent standards of the Occupational Safety and Health Administration. Topics of discussion include industrial noise, particulate, solvents, hazard communication, heat stress, and biohazards. Reference is made to the anatomical systems affected by exposures. Laboratory work emphasizes hands-on

experience with state-of-the-art industrial hygiene survey equipment. Prerequisites: PHYS 226 and 236, or equivalent CHEM 107 and 221, or equivalent BIOL 361, OSH 312, and MATH 112 or equivalent. (F)

**OSH 414. Principles of Fire Prevention**

**Credit 3(2-2)**

This course is an introduction to the principles of fire prevention and fire theory. An emphasis is placed on the Life Safety Code of the National Fire Protection Agency and pertinent standards from the Occupational Safety and Health Administration. Prerequisites: CHEM 107, or equivalent, and OSH 312. (S)

**OSH 415. Standards and Regulations in Occupational Safety and Health**

**Credit 3(3-0)**

This course is an overview of regulatory compliance in the field of occupational safety and health. An emphasis is placed on the Occupational Safety and Health Administration standards for general industry and construction. Prerequisite: OSH 312. (F;S;SS)

**OSH 416. Industrial Hygiene II**

**Credit 4(3-3)**

This course is a continuation of OSH 413. Topics of discussion include ionizing radiation, non-ionizing radiation, ergonomics, toxicology, industrial ventilation, general ventilation, and respiratory protection. An emphasis is placed on methods of control of work place hazards. Prerequisite: OSH 413. (S)

**OSH 513. Human Factors**

**Credit 3(2-2)**

This course is an overview of the discipline of human factors. Emphasis is placed on ergonomics and the hazards of physical work, including cumulative trauma disorders, lower back injuries, and over-work. Topics of discussion include system theory and reliability calculation, cost/benefit analysis, signal detection theory, human perception, and anthropometry. Prerequisites: OSH 416, MATH 224 or equivalent, and PSYC 445 or equivalent. (S)

**OSH 515. Evaluation for Occupational Safety and Health**

**Credit 3(1-4)**

This course is an introduction to technical writing for the occupational safety and health profession. An emphasis is placed on documentation of calibration and analytical methods for industrial hygiene hazard evaluation. Prerequisite: OSH 416. (F;S;SS)

**OSH 516. Occupational Safety and Health Management**

**Credit 3(3-0)**

This course is an overview of the application of management principles to the establishment and maintenance of occupational safety and health programs. An emphasis is placed on written safety and health programs in compliance with standards from the Occupational Safety and Health Administration. Prerequisites OSH 312 and BUAD 422. (F)

**OSH 517. Materials Handling for the Safety Professional**

**Credit 3(2-3)**

This course is an introduction to the recognition, evaluation, and control of work place hazards associated with the handling of materials. An emphasis is placed on the materials handling and storage standards of the Occupational Safety and Health Administration. Prerequisites: OSH 312, PHYS 226 or equivalent, and MATH 112 or equivalent. (F;S;SS)

**OSH 555. Health Physics**

**Credit 3(3-0)**

This course is an introduction to health physics. Emphasis is placed on the physics of radiation, adverse health effects of radiation, time/distance/shielding control of exposure, and regulations of the Nuclear Regulatory Commission found in the Code of Federal Regulations. Prerequisite: PHYS 235 or approval of instructor. (F;S;SS)

**OSH 614. Industrial Relations**

**Credit 3(3-0)**

This course is an overview of legislation and methods pertinent to the practice of occupational safety and health in the human resource environment. Emphasis is placed on total quality management, anti-discrimination legislation, wage and hour law, workers' compensation, training for safety, behavioral aspects of safety, and the process of health and safety inspections of the Occupational Safety and Health Administration. (F;S;SS)



**OSH 632. Design of Engineering Hazard Controls****Credit 3(2-2)**

This course is an overview of the design and assessment of engineering controls for the abatement of health and safety hazards in the work-place. An emphasis is placed on cost benefit analysis, and technical and financial feasibility. Topics of discussion include industrial noise abatement, industrial ventilation, machine guarding, and walking and working surfaces. Prerequisites: OSH 416, MFG 191, and MFG 491. (F)

**OSH 637. Machine and Welding Safety****Credit 3(3-0)**

This course is an overview of the identification and control of the fire and electrocution hazards of electrical wiring and equipment. An emphasis is placed on the National Electric Code and electrical standards of the Occupational Safety and Health Administration found in the Code of Federal Regulations. Prerequisites: OSH 312, PHYS 226 and 236 or equivalent. (F;S;SS)

**OSH 642. Electrical Safety****Credit 3(3-0)**

This course is an overview of the identification and control of the fire and electrocution hazards of electrical wiring and equipment. An emphasis is placed on the National Electric Code and electrical standards of the Occupational Safety and Health Administration found in the Code of Federal Regulations. Prerequisites: OSH 312, PHYS 226 and 236 or equivalent. (F;S;SS)

**OSH 672. System Safety and Other Analytical Methods****Credit 3(3-0)**

This course is an overview of system theory and process safety management. An emphasis is placed on regulatory compliance with the process safety management standard of the Occupational Safety and Health Administration. Topics of discussion include fault tree analysis, failure modes, and risk analysis and management. Prerequisites: MATH 224 or equivalent and OSH 411. (S)

**OSH 678. Experiential Education I****Credit 3(3-0)**

To satisfy the requirements of this course, students must engage in cooperative activities within industry, government agencies, or consulting firms. Work responsibilities must include significant hazard assessment activities. Conditions of experience are supervised by department faculty. (F;S;SS)

**OSH 679. Experiential Education II****Credit 3(3-0)**

To satisfy the requirements of this course, students must engage in intern activities within industry, government agencies, or consulting firms. Work responsibilities must include significant hazard assessment activities. Conditions of experience are supervised by department faculty. (F;S;SS)

**OSH 731. Toxicology for the Industrial Hygienist****Credit 3(3-0)**

This course is a basic survey of the principles of toxicology. Emphasis will be placed on the effects of common industrial toxicants; absorption, distribution, secretion, and biotransformation of toxicants; and toxicological assay methods. Prerequisite: OSH 416 or approval of instructor. (F;S;SS)

**OSH 751. Industrial Ventilation****Credit 3(2-2)**

This course is an introduction to the design of local exhaust ventilation systems for the control of airborne contaminants. An emphasis will be placed on the velocity pressure method of predicting system performance, and minimization of total installation and operational costs. Prerequisite: OSH 416 or approval of instructor. (F;S;SS)



## DIRECTORY OF FACULTY

- Horlin Carter** ..... **Adjunct Lecturer**  
B.A., M.S., Marshall University; Ph. D. Michigan State University
- David Dillon**..... **Associate Professor and Chairperson**  
B.S., Northwestern State University; M.A., University of Northern Colorado; Ed.D., North Carolina State University
- Robert B. Pyle** ..... **Professor**  
B.A., M.A., Trenton State College; Ph.D., University of Pittsburgh
- Dilip T. Shah** ..... **Associate Professor**  
B.E., Poona, India; M.S., Illinois State University; Ph.D., Texas A&M University
- Musibau A. Shofoluwe**..... **Professor**  
B.S., North Carolina A&T State University; M.S., Pittsburgh State University; DIT University of Northern Iowa
- Syrulwa L. Somah** ..... **Assistant Professor**  
B.S., Empire State College State University of New York; M.S., Central Michigan University; M.S., University of Oklahoma; Ph.D., The Union Institute
- Lewis Waller** ..... **Adjunct Lecturer**  
B.S., M.S., North Carolina A&T State University

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## **Department of Electronics and Computer Technology**

<http://www.ncat.edu/~sot/ect>

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**Derrek B. Dunn, Acting Chairperson**

### **OBJECTIVES**

The Department of Electronics and Computer Technology (ECT) prepares students to pursue technical, as well as technical management careers in all employment sectors. The program emphasizes acquisition of sound theoretical studies, as well as intensive “hands-on” experiences in the area of electronics technology. The ECT department emphasizes development of “real world” competencies demanded by employers. Students receive thorough grounding in electronics; digital and microprocessor systems; computer technologies, including hardware, software and computer networking; communication systems; and automation and control systems. Additional emphasis is placed on courses in business management, statistical process control, safety and project management, and manufacturing processes. Such courses instill an appreciation for the economic and managerial aspects of the business enterprise.

### **DEGREES OFFERED**

Electronics Technology – Bachelor of Science

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree program in the Department of Electronics and Computer Technology is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

Electronics Technology majors must complete 128 semester hours of University coursework. A minimum grade of “C” must be earned in all major courses.

Graduates of appropriate associate degree programs may be admitted to the electronics technology program as juniors. Specific course requirements for these students will have to be made on an individual basis after their previously earned credits have been assessed. The typical student in this program will be required to take at least 63 additional semester hours.

Any student transferring to the Department of Electronics and Computer Technology from other disciplines must have a minimum of 2.0 overall G.P.A.

### **ACCREDITATION**

The National Association of Industrial Technology accredits the program.

### **CAREER OPPORTUNITIES**

ECT graduates are very successful in receiving employment in both private and public sectors with positions in technology, engineering technology, engineering, and management. Typical job titles include: process engineers, application engineers, systems analysts, network administrators, project managers, information technologists, test engineers, industrial technologists, and engineering technologists. Major employers include General Dynamics, IBM, Lucent Technologies, AT&T, Accenture (formerly Anderson Consulting), General Dynamics, Alcatel, and numerous public agencies.

## REQUIRED MAJOR COURSES FOR ELECTRONICS TECHNOLOGY

ECT 101	ECT 213	ECT 355
ECT 120	ECT 312	ECT 360
ECT 201	ECT 313	ECT 413
ECT 211	ECT 314	ECT 598
ECT 212	ECT 350	

## CURRICULUM GUIDE FOR ELECTRONICS TECHNOLOGY

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 110	4	CHEM 106, 116 <sup>1</sup>	4
ECT 101	3	GCS 234	3
MFG 191	3	ECT 120	3
PHED 200	2	MATH 131	4
	15		17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECT 201	3	ECT 212	3
PHYS 225, 235	4	PHYS 226, 236	4
MATH 132	4	SPCH 250	3
GCS 292 or ENGL 331	3	ECT 213	3
ECT 211	3	Liberal Arts Elective	3
	17		16

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ECT 312	3	ECT 314	3
ACCT 203	3	ECT 350	3
Liberal Arts Elective	3	ECT 360	3
ECT 313	3	Liberal Arts Electives	6
ECT 355	3		15
	15		

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PSYC 445 or 320	3	OSH 593	3
ECT 413	3	Technical Specialization	3
CM 592	3	Free Elective	6
BUAD 422	3	MFG 495	3
Technical Specialization	3		15
ECT 598	3		
	18		

Total Credit Hours: 128

*Students who have not had high school chemistry should first take CHEM 099*

*See your advisor for a list of approved liberal arts electives*

*See an advisor for a list of approved technical specialization courses*

*May substitute ECT 497 or 498 for ECT 598 with advisor's approval*

*A prerequisite of GCS 133 is recommended for students who have not taken a prior drafting course*

*NOTE: Military or Air Science may be used as free electives.*

### Courses for Certificate Program in

#### Radio Frequency & Microwave Wireless Communication Systems

*Required Core Courses: (6 hours)*

ECT 650 and 665

*Elective Courses: (6 hours)*

ECT 634, 655, 660, 670, 675, 680, and 690

*Required Project Course: (3 hours)*

ECT 699

## **COURSE DESCRIPTIONS IN ELECTRONICS AND COMPUTER TECHNOLOGY**

### **Undergraduate**

#### **ECT 101. Technical Computers I**

**Credit 3(2-2)**

This course is designed to provide the student with basic computer skills as required in a typical business environment. Emphasis is on various business software packages including spreadsheets, database management, word-processing, etc., as run on UNIX, DOS, and Windows platforms. Basic language programming is also covered. (F;S;SS)

#### **ECT 120. Introduction to Electronics Technology**

**Credit 3(2-2)**

This course provides a survey of the field of electronics and computer technology and a grounding in basic problem-solving techniques. This course also provides the mathematical background needed in the field of electronics and computer technology. Topics include a review of arithmetic review, algebra, basic trigonometry, complex algebra, binary algebra and fundamental units. (F;S;SS)

#### **ECT 121. Electronic Circuit Fabrication Techniques**

**Credit 1(0-2)**

This course is designed to facilitate the integration of electronic circuit construction techniques into multiple electronic courses. This course is further designed to teach the student how to construct electronics circuits on breadboards and printed circuit boards. The students will also be exposed to the technique of hand soldering. (F;S;SS)

#### **ECT 201. Technical Computers II**

**Credit 3(2-2)**

This course gives an introduction to computer programming using the "C" language. Topics include structured program development, an introduction to the UNIX operating system and a brief introduction to the C++ programming language. Prerequisite: ECT 101 or departmental consent. (F;S;SS)

#### **ECT 211. Electric Circuits I**

**Credit 3(2-2)**

This course is a study of the fundamentals of direct current electrical circuits. Topics include series, parallel, series-parallel networks, Ohm's Law, Kirchhoff's Laws, network theorems, and practical applications. Prerequisites: ECT 120 and MATH 110 or MATH 111. (F;S;SS)

#### **ECT 212. Electric Circuits II**

**Credit 3(2-2)**

This course is a continuation of Electric Circuits I. Topics include network analysis, power factor correction, complex impedance, polyphase systems, filters, resonance, and simple dynamos. Prerequisite: ECT 211. (F;S;SS)

#### **ECT 213. Digital Circuits**

**Credit 3(2-2)**

This course deals with digital logic fundamentals. Topics include combination and sequential circuits and systems. Karnaugh maps and software tools are utilized. Prerequisite: ECT 211. (F;S;SS)

#### **ECT 220. Electromechanical Systems Analysis**

**Credit 4(4-0)**

This course deals with the fundamentals of electrical and mechanical dynamical systems. Frequency and time domain analysis techniques are utilized. Electrical and mechanical applications of first and second order linear differential and difference equations are examined through transform techniques. Specialized applications software packages are examined. Prerequisites: MATH 112, MFG 293, and ECT 211. (SS)



- ECT 301. Technical Computers III** **Credit 3(2-2)**  
 This course will introduce the student to the practical hardware and software aspects of personal computers. Topics include operating systems, installation of software and hardware, configuration, troubleshooting, I/O and basic networking. Prerequisite: ECT 101. (F;S;SS)
- ECT 312. Active Circuits I** **Credit 3(2-2)**  
 This course is an introduction to active electronic circuitry. Topics include power supplies, small and large signal amplifiers and linear integrated circuits. Prerequisite: ECT 212. (F;S;SS)
- ECT 313. Electronic Microcomputer Systems I** **Credit 3(2-2)**  
 This course addresses the programming and interfacing of 8-bit microcomputer based systems. Prerequisite: ECT 213. (F;S;SS)
- ECT 314. Active Circuits II** **Credit 3(2-2)**  
 This course is a continuation of Active Circuits I. Topics include oscillators, phase locked loops, current differencing amplifiers, logarithmic amplifiers, transconductance amplifiers, voltage regulators and specialized communications circuits. Prerequisite: ECT 312. (F;S;SS)
- ECT 330. Industrial Electronics & Control I** **Credit 3(2-2)**  
 This course addresses the role of electronic circuits and control systems in industry. The topics include application of power semiconductor devices for conversion and control of electrical energy, relays, transducers, fundamentals of open and closed loop control systems, process control and programmable logic controllers. Prerequisites: ECT 312 and 313 (F;S;SS)
- ECT 334. Electronics Instrumentation** **Credit 3(2-2)**  
 This course will develop competencies related to electronic based measurement systems. Topics include basic and advanced measurements, data acquisition systems, telemetry, sensors and interdomain converters. Prerequisites: ECT 213 and 312. (F;S;SS)
- ECT 350. Communications Systems** **Credit 3(2-2)**  
 This course investigates the fundamental concepts of electronic communications systems. Topics include Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), digital modulation schemes, principles of power spectra and time domain analysis. Prerequisite: ECT 312. (F;S;SS)
- ECT 355. Electrical Power and Machinery** **Credit 3(2-2)**  
 This course addresses the fundamentals of rotating electrical machinery and electrical power generation, transmission and distribution. Prerequisite: ECT 212. (F;S;SS)
- ECT 360. Industrial Measurements and Control** **Credit 3(2-2)**  
 This course deals with the basic principles of electronic industrial measurements and control. Topics include transducers, final correcting devices, open and closed loop controllers, stability and damping. The student will be required to analyze complex industrial measurement and control systems. Prerequisites: ECT 312 and 313. (F;S;SS)
- ECT 413. Electronic Microcomputer Systems II** **Credit 3(2-2)**  
 This course is a continuation of ECT 313, with an emphasis on 16/32 bit systems and microcontrollers. Topics include interfacing and programming of microcomputer and microcontroller systems. Prerequisite: ECT 313. (F;S;SS)
- ECT 430. Industrial Electronics & Control II** **Credit 3(2-2)**  
 This course is the continuation of ECT 330. Emphasis is on the analysis of complex industrial control systems, robotics, advanced topics in programmable logic controllers and the role of electronics in manufacturing processes. Prerequisite: ECT 330. (F;S;SS)

**ECT 455. Power Electronic Applications** **Credit 3(2-2)**

This course addresses the principles and applications of power electronics. Topics include power semi-conductor switches, phase controlled rectifiers, DC-to-DC converters, DC-to-DC inverters, motor drives, and power quality. Prerequisites: ECT 314 and 355. (SS)

**ECT 460. Industrial Measurement and Controls II** **Credit 3(2-2)**

This course is a continuation of ECT 360. Emphasis is on the analysis of complex industrial control systems. Prerequisite: ECT 360. (SS)

**ECT 497. Co-Operative Training in Industry I** **Credit 3(2-2)**

Students must be in industry full-time for one semester in the major field of work and complete any University co-op requirements. The student will be evaluated on reports from industry and the University co-op coordinator. The hours earned will be credited toward required technical electives in the electronics and computer technology curriculum. Four-semester hours' credit is the maximum to be earned under this arrangement any one semester. Eight semester hours are the maximum to be earned in the co-op arrangement in the Electronics and Computer Technology Department. (F;S;SS)

**ECT 498. Cooperative Training in Industry II** **Credit 3(2-2)**

The description of this course is the same as ECT 497 and is normally the second co-op experience of the student. (F;S;SS)

**ECT 598. Senior Project** **Credit 3(0-6)**

Under the direction and guidance of departmental faculty, the student will independently design, build and test an approved project. Progress reports, a formal written report and a formal presentation will be required. Prerequisite: Senior standing. (F;S;SS)

**ECT 599. Independent Study** **Credit 3(0-6)**

The student selects a technical problem in electronics or computer technology for special research and study in consultation with a faculty member in area of interest. The student will spend a minimum of six hours per week in library research or laboratory experimentation. A technical report in standard format is required for completion and approved by faculty. Prerequisites: Junior or senior standing and department chairperson approval. (F;S;SS)

**Undergraduate/Graduate**

**ECT 601. Wireless Application Protocols** **Credit 3(2-2)**

This course takes you through the basics of Wireless Application Protocols (WAPs), and provides all the information needed to create WAP pages using the Wireless Markup Language (WML). The course will include an introduction to WAP and WML, cards and decks, text formatting elements, navigational commands in WML, and WML variables. Prerequisites: ECT 201 and junior standing. (F;S;SS)

**ECT 610. Digital Communications I** **Credit 3(2-2)**

The class will investigate digital communications systems for various signals including audio, video and data. Topics include: sampling, quantization, multiplexing, coding, modems, various compression schemes, signal impairment, and various digital modulation schemes. Prerequisite: ECT 350. (F;S;SS)

**ECT 611. Digital Communications II** **Credit 3(2-2)**

This course is a continuation of ECT 610. Emphasis is placed on multimedia networks and their supporting platforms. Topics include audio and video standards and compression schemes, cable modems and xDSL schemes. Prerequisite: ECT 610 or departmental approval (F;S;SS)

**ECT 620. Telecommunications Management** **Credit 3(2-2)**

This course addresses fundamental principles of telecommunications management, which includes network management and administration, the telecommunications marketplace, and the

planning and evaluation of systems. The technology of modern telecommunications systems is also reviewed. Prerequisite: ECT 350. (F;S;SS)

**ECT 630. Electronic Communications Networks** **Credit 3(2-2)**

This course involves an intensive investigation of the principles involved in designing Local Area Networks (LANs), Metropolitan Area Networks (MANs), and Wide Area Networks (WANs). The student will be required to design an appropriate network to meet pre-determined specifications. Prerequisite: ECT 350. (F;S;SS)

**ECT 634. Electronic Instrumentation For Telemetry Applications** **Credit 3(2-2)**

This course will provide practical knowledge of the operation of electronics instruments used in the applications of telemetry, remote sensing and detection. Possible electronic systems that will be discussed include RADAR, SONAR, LIDAR, and SODAR. Prerequisite: ECT 334 or departmental approval. (F;S;SS)

**ECT 635. Analysis and Design of Mechatronic Systems** **Credit 3(1-4)**

This course deals with the principles of analyzing and designing mechatronics systems. This course includes a review of logic gates, microprocessor architecture, sensors and actuators, A/D and D/A conversion techniques, real-time multi-tasking programming concepts, and direct digital control implementation. The course includes "hands-on" experiences through several laboratory assignments and a final team project. Prerequisites: ECT 201, 312, and 313 (F;S;SS)

**ECT 640. Electronic Automated Testing Systems** **Credit 3(2-2)**

This course addresses the fundamentals of electronic automated testing systems. Topics include production, reliability, and maintenance testing. Various types of Automated Test Equipment (ATE) are addressed, including Built In Test Equipment (BITE) and stand-alone systems. Prerequisite: ECT 360. (F;S;SS)

**ECT 650. Wireless Communication Systems** **Credit 3(3-0)**

This course covers fundamental theory and design of high capacity wireless communication systems. Topics include trunking, propagation effects, frequency reuse, modulation methods, coding and equalization. Emerging cellular and next generation personal communication systems will also be analyzed. Prerequisite: ECT 350. (F;S;SS)

**ECT 655. Optical Communications Systems** **Credit 3(2-2)**

This course covers advanced fiber optic communication technology (including lasers, optical amplifier dynamics and turntable optical filters) with applications to high-speed long distance systems, local area networks and communication systems. Prerequisite: ECT 350 or departmental approval. (F;S;SS)

**ECT 660. Satellite and Personal Communication Systems** **Credit 3(3-0)**

This course covers the theory and practice of satellite communications including orbits, launchers, spacecraft, link budgets, modulation techniques, coding, multiple access techniques, propagation effects and earth terminals. Prerequisite: ECT 350 or departmental approval. (F;S;SS)

**ECT 665. Wireless Geo-location Systems I** **Credit 3(2-2)**

This course will describe the basic concepts and mechanics of Global Positioning Systems (GPS) and Inertial Navigation Systems (INS). Practical applications of GPS, INS and GPS/INS will be covered. Simple algebraic mathematical calculations will be completed. Prerequisite: ECT 350 or departmental approval. (F;S;SS)

**ECT 670. Communication Circuit Development Laboratory I** **Credit 3(1-4)**

This course studies advanced methods of analysis of communication circuits including oscillators, radio frequency amplifiers, matching networks, modulators, mixers, and detectors for the HF through UHF frequencies range using Y- and S- parameter methods. Prerequisite: ECT 350. (F;S;SS)



- ECT 675. Video Communication Systems**
**Credit 3(2-2)**
- This course will study the techniques used to transmit and receive analog and digital video information. This course will also discuss current state of the art video technology such as High Definition Television (HDTV). Prerequisite: ECT 350. (F;S;SS)
- ECT 680. Radio Wave and Optical Signal Propagation**
**Credit 3(2-2)**
- This courses models the behavior of unguided electromagnetic and optical waves in the atmosphere, space, urban and indoor environments. The course will also discuss path, frequency and antenna selection for practical radio wave communication systems. Prerequisite: ECT 350. (F;S;SS)
- ECT 690. Special Problems in Electronics and Computer Technology**
**Credit 3(3-0)**
- This lecture course is used to introduce new topics in the field of electronics and computer technology. The subject matter will be identified prior to the beginning of the course. Prerequisite: Departmental approval. (F;S;SS)
- ECT 699. Independent Study in Electronics and Computer Technology**
**Credit 3(3-0)**
- The student selects a problem (technical or managerial) in consultation with a faculty member in an area related to electronics technology or computer technology or telecommunications or networking. The student, along with the faculty member defines the problem's objectives and a solution is pursued. Prerequisite: Graduate standing. (F;S;SS)

DIRECTORY OF FACULTY

- Thomas Avery**
Assistant Professor
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- DeWayne Brown**
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- B.S.E.E., University of South Carolina; M.S.E.E., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Derrek Dunn**
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- Fereshteh Fatehi**
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- Angela Lemons**
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## Department of Graphic Communication Systems and Technological Studies

<http://www.ncat.edu/~gcsts>

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Nancy Glenz, Chairperson

### OBJECTIVES

The major objective of the Department of Graphic Communication Systems and Technological Studies (GCSTS) is to provide quality competency-based instruction so that men and women will be prepared to enter the fields of graphic communication systems, technology education, trade and industrial education, and training and development for industry. In addition, the Department assists majors in developing those critical competencies in the sciences, communications, mathematics, and technical specialties essential to securing positions in related industrial, business and government careers.

### DEGREES OFFERED

Graphic Communication Systems – Bachelor of Science

Technology Education – Bachelor of Science

Technology Education – Master of Science \*

\* See the Graduate School Bulletin

### GENERAL PROGRAM REQUIREMENTS

Student admission to undergraduate degree programs in the Department of Graphic Communication Systems and Technological Studies is based on general admission requirements of the University.

Admission, retention, and state licensure of students in technology education, teaching and trade and industrial education, teaching concentrations are based on policies described in the School of Education section of the Bulletin.

Persons with technical preparation and interest in training and development for industry which does not require teacher licensure may pursue a bachelor's degree in the Department of Graphic Communication Systems and Technological Studies. Students pursuing this option will not be recommended to receive teacher licensure in North Carolina.

Community college and technical institute graduates and other transfer students may be admitted to undergraduate Graphic Communication Systems and Technological Studies programs with advanced classification by submitting credentials to the University Admissions Office for individual assessment. The maximum transfer credit from Associate Degree technical programs is 64 semester hours or approximately junior status. Students transferring to the Department of Graphic Communication Systems and Technological Studies from other disciplines must have a minimum of 2.0 grade point average.

### DEPARTMENTAL REQUIREMENTS

*Graphic Communication Systems:* Students are required to complete 126 semester hours of University course work. A minimum of 30 semester hours must be completed in the technical specialization. A minimum grade of "C" must be earned in all major courses. Students must maintain a grade point average of 2.0 or better for all course work.

*Technology Education: Technology Education, Teaching concentration.* Students must complete 128 semester hours, which include general studies, professional education, major courses, second academic concentration, and electives. Included in the major sequence are technical electives. The grade point average in major courses must be 2.0 or better.

*Technology Education: Trade and Industrial Education, Teaching concentration.* Students must complete 128 semester hours, which include general studies, professional education, major courses, second academic concentration, and electives. Included in the major sequence are technical electives concentrated in one of the following seven optional cluster areas: Construction Industries, Drafting and Graphic Industries, Electronic Industries, Manufacturing Industries, Transportation Industries, Printing Industries, and Service Industries. The grade point average in major courses must be 2.0 or better.

*Technology Education: Training and Development for Industry concentration.* Students must complete 126 semester hours, which include general studies, major courses, and electives. Included in the major sequence are technical electives concentrated in one of the following seven optional cluster areas: Construction Industries, Drafting and Graphic Industries, Electronic Industries, Manufacturing Industries, Transportation Industries, Printing Industries, and Service Industries. The grade point average in major courses must be 2.0 or better.

For persons who possess prior technical transfer credits or work experience in recognized areas of trade and industrial education, further technical sub-options are available within the cluster areas above. Such students will pursue individualized programs tailored to meet their specific needs, provided the following conditions are satisfied:

1. The area selected for a technical concentration in the major must be recognized by the North Carolina State Department of Public Instruction for Trade and Industrial teacher certification.
2. The student must initially enter the program with advanced classification.
  - \* Persons holding an Associate Degree in the technical field may apply such transfer credits toward meeting technical course requirements.
  - \* Persons meeting University admission requirements desiring to substitute work/trade experience to meet technical course requirements in the field selected may receive college credit by satisfactory completion of a competency-based examination.

*NOTE: Transfer students and persons applying college credits earned through competency examinations may apply a maximum of 24 semester hours of credit toward meeting technical course requirements in degree programs.*

## **ACCREDITATION**

The graphic communication systems program is accredited by the National Association for Industrial Technology (NAIT). The technology education programs are accredited by the National Council for Accreditation of Teacher Education (NCATE) and are approved by the North Carolina Department of Public Instruction (NCDPI). The technology education program is certified by the International Technology Education Association (ITEA).

## **CAREER OPPORTUNITIES**

Graduates of the graphic communication systems program option have a variety of career options in management, production, design, or sales. A range of opportunities is available in photography, design and drafting, advertising, in-plant printing, and publishing.

Excellent employment opportunities exist for persons trained in technology education. Public schools (K-12), community colleges, technical institutes, colleges, and universities are in constant need of securing qualified teachers in technology education. Teaching positions continue to remain open for technology education specialists and shortages of personnel are reported in

many states. Schools are experiencing major difficulty in locating competent persons to fill technology education vacancies.

In addition to teaching, many career opportunities exist for trade and industrial education and training and development for industry graduates. These include industrial-business enterprises, government agencies, rehabilitation and vocational therapy centers, private schools and recreational camps. Trade and industrial education and training and development for industry graduates are employed as training directors, managers, supervisors, engineering assistants, sales, and safety personnel.

## REQUIRED MAJOR COURSES FOR GRAPHIC COMMUNICATION SYSTEMS

Depend upon the selected area of specialization  
(Please see list at the end of Curriculum Guide).

### CURRICULUM GUIDE FOR GRAPHIC COMMUNICATION SYSTEMS

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
GCS 110	3	GCS 234	3
GCS 133	3	ART Elective	3
TECH 218	<u>3</u>	GCS Specialty	<u>3</u>
	16		16

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 225 & 235	4	CHEM 106 & 116	4
GCS 263	3	Social Science Elective <sup>1</sup>	3
GCS 292	3	ART Elective	3
GCS Specialty	3	SPCH 250	3
TECH 382	<u>3</u>	GCS Specialty	<u>3</u>
	16		16

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 203	3	PSYC 445	3
Humanities Elective <sup>1</sup>	3	BUAD 430 <sup>2</sup>	3
Social Science Elective <sup>1</sup>	3	Natural Science Elective	4
OSH 393	3	GCS 430	3
GCS Specialty Elective	<u>3</u>	GCS 610	<u>3</u>
	15		16

#### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MFG 495	3	GCS 585	3
GCS Specialty	3	Free Elective	3
GCS Specialty	3	GCS Specialty	3
GCS Specialty	3	GCS Specialty	3
Free Elective	2	Humanities Elective <sup>1</sup>	<u>3</u>
PHED 200	<u>2</u>		15
	16		

Total Credit Hours: 126

<sup>1</sup> Students must complete three semester hours in African American Studies and three semester hours in Global Studies as outlined in the University Bulletin.

<sup>2</sup> Students must have 64 semester hours to enroll in BUAD 430.

## SPECIALIZED GRAPHIC COMMUNICATION SYSTEMS COURSES

(36 Semester hours Required)

Select courses from the following areas:

### **COMPUTER AIDED DRAFTING/DESIGN:**

GCS 233, GCS 234, GCS 333, GCS 334, GCS 430, GCS 433, GCS 434, GCS 435, GCS 533, GCS 534, GCS 536, GCS 610, GCS 611, GCS 631, GCS 632, GCS 633, GCS 644, GCS 667, GCS 668

### **PRINTING/PUBLISHING:**

GCS 110, GCS 120, GCS 130, GCS 250, GCS 330, GCS 331, GCS 332, GCS 416, GCS 418, GCS 430, GCS 581, GCS 585, GCS 590, GCS 601, GCS 610, GCS 611, GCS 630, GCS 634, GCS 635, GCS 636, GCS 637, GCS 667, GCS 668, GCS 670

## REQUIRED MAJOR COURSES FOR TECHNOLOGY EDUCATION

### (TECHNOLOGY EDUCATION TEACHING CONCENTRATION)

TECH 218	TECH 413	TECH 462
TECH 219	TECH 414	TECH 510
TECH 382	TECH 415	TECH 566
TECH 412	TECH 416	TECH 672

## CURRICULUM GUIDE FOR TECHNOLOGY EDUCATION

### (TECHNOLOGY EDUCATION TEACHING CONCENTRATION)

With Secondary Academic Concentration (SAC) - Interdisciplinary Technology

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	GCS 234 (SAC*)	3
GCS 133	3	ENGL 101	3
TECH 218	3	MATH 112	4
MATH 111	4	TECH 382	3
GCS 110 (SAC*)	<u>3</u>	CUIN 102	<u>2</u>
	16		15

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>1</sup>	3	Natural Science Elective	4
(recommend ENGL 333)		PHED 200	2
PHYS 225	3	SPCH 250	3
PHYS 235	1	PSYC 320	3
Social Science Elective <sup>1</sup>	3	CM 150 (SAC*)	3
(recommend global studies)		CUIN 301	<u>3</u>
GCS 263 (SAC*)	3		18
TECH 219	<u>3</u>		
	16		

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>1</sup>	3	TECH 462	3
TECH 414	3	TECH 662/672	3
ECT 211 (SAC*)	3	CUIN 400	3
MFG 293 (SAC*)	3	CUIN 436	3
TECH 413	<u>3</u>	TECH 412	3
	15	TECH 415	<u>3</u>
			18



## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
TECH 566	3	CUIN 560	12
SPED 350	3	TECH 510	<u>3</u>
TECH 416 (SAC*)	3		15
MFG 472 (SAC*)	3		
CUIN 624	<u>3</u>		
	15		

Total Credit Hours: 128

\* *Second Academic Concentration (SAC) Interdisciplinary Technology. If another SAC is preferred, then the student must consult with the advisor. A SAC is not required for Training and Development for Industry Concentration.*

<sup>1</sup> *Humanities and Social Science Electives (six hrs. each) any elective in Humanities and Social Science (see University Course Requirements)*

## REQUIRED MAJOR COURSES FOR TECHNOLOGY EDUCATION

### (TRADE AND INDUSTRIAL EDUCATION TEACHING CONCENTRATION)

TECH 218	TECH 462	TECH 566
TECH 382	TECH 510	TECH 672

Additional courses depend upon the selected area of specialization

## CURRICULUM GUIDE FOR TECHNOLOGY EDUCATION

### (TRADE AND INDUSTRIAL EDUCATION TEACHING CONCENTRATION)

With Second Academic Concentration (SAC) - Interdisciplinary Technology

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	GCS 234 (SAC*)	3
GCS 133	3	ENGL 101	3
TECH 218	3	MATH 112	4
MATH 111	4	TECH 382	3
GCS 110 (SAC*)	<u>3</u>	CUIN 102	<u>2</u>
	16		15

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>1</sup>	3	Natural Science Elective	4
(recommend ENGL 333)		PHED 200	2
PHYS 225	3	SPCH 250	3
PHYS 235	1	ECON 200	3
Social Science Elective <sup>1</sup>	3	CM 150 (SAC*)	3
(recommend global studies)		CUIN 301	<u>3</u>
GCS 263 (SAC*)	3		18
Selected Technical Specialty <sup>2</sup>	<u>3</u>		
	16		

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>1</sup>	3	TECH 462	3
Selected Technical Specialty <sup>2</sup>	3	TECH 662/672	3
ECT 211 (SAC*)	3	CUIN 400	3
MFG 293 (SAC*)	3	CUIN 436	3
Selected Technical Specialty <sup>2</sup>	<u>3</u>	Selected Technical Specialty <sup>2</sup>	3
	15	Selected Technical Specialty <sup>2</sup>	<u>3</u>
			18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
TECH 566	3	CUIN 560	12
SPED 350	3	TECH 510	<u>3</u>
TECH 416 (SAC*)	3		15
MFG 472 (SAC*)	3		
CUIN 624	<u>3</u>		
	15		

Total Credit Hours: 128

\* *Second Academic Concentration (SAC) Interdisciplinary Technology. If another SAC is preferred, then the student must consult with the advisor. A SAC is not required for Training and Development for Industry Concentration.*

<sup>1</sup> *Humanities and Social Science Electives (six hrs. each) any elective in Humanities and Social Science (see University Course Requirements)*

<sup>2</sup> *Selected Technical Specialty. Need 15 to 21 semester hours in a Selected Technical Specialty Area listed below the Training and Development for Industry curriculum guide.*

## REQUIRED MAJOR COURSES FOR TECHNOLOGY EDUCATION

### (TRAINING AND DEVELOPMENT FOR INDUSTRY CONCENTRATION)

TECH 218	TECH 462	TECH 566
TECH 382	TECH 510	TECH 672

Additional courses depend upon the selected area of specialization

## CURRICULUM GUIDE FOR TECHNOLOGY EDUCATION

### (TRAINING AND DEVELOPMENT FOR INDUSTRY CONCENTRATION)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	GCS 234	3
GCS 133	3	ENGL 101	3
TECH 218	3	MATH 112	4
MATH 111	4	TECH 382	3
GCS 110	<u>3</u>	ECON 200	<u>3</u>
	16		16

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>1</sup>	3	Natural Science Elective	4
(recommend ENGL 333)		PHED 200	2
PHYS 225	3	SPCH 250	3
PHYS 235	1	PSYC 320	3
Social Science Elective <sup>1</sup>	3	Selected Technical Specialty <sup>2</sup>	<u>3</u>
(recommend global studies)			15
GCS 263	3		
Selected Technical Specialty <sup>2</sup>	<u>3</u>		
	16		

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>1</sup>	3	TECH 462	3
Selected Technical Specialty <sup>2</sup>	3	TECH 662 / 672	3
Selected Technical Specialty <sup>2</sup>	3	Technical Elective <sup>3</sup>	3
Free Elective	3	Free Elective	3
BAUD 430	<u>3</u>	TECH 510	<u>3</u>
	15		15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
TECH 566	3	TECH 661	3
TECH 660	3	GCS 636	3
TECH 670	3	GCS 611	3
GCS 610	3	TECH 671	3
Selected Technical Specialty <sup>2</sup>	3	TECH 618 / 626	<u>3</u>
TECH 663	<u>3</u>		15
	18		

Total Credit Hours: 126

\* *Second Academic Concentration (SAC) Interdisciplinary Technology. A SAC is not required for Training and Development for Industry Concentration.*

<sup>1</sup> *Humanities and Social Science Electives (six hrs. each) any elective in Humanities and Social Science (see University Course Requirements)*

<sup>2</sup> *Selected Technical Specialty. Need 15 to 21 semester hours in a Selected Technical Specialty Area listed below.*

<sup>3</sup> *Any course in Technology.*

### Selected Technical Specialization Areas (15-21 hrs. required)

#### ***Construction Industries:***

GCS 334, GCS 434, CM 215, CM 216, CM 317, CM 333, CM 412 CM 598

#### ***Computer-Aided Drafting/Design Industries:***

GCS 333, GCS 334, GCS 433, GCS 434, GCS 435, GCS 533, GCS 534, GCS 536,  
GCS 631, GCS 632, GCS 633, GCS 644

#### ***Electronic Industries:***

GCS 333, ECT 211, ECT 212, ECT 213, ECT 312, ECT 350, ECT 313, ECT 413, ECT 650

#### ***Manufacturing Industries:***

MFG 191, MFG 472, MFG 474, MFG 475, MFG 480, MFG 481, MFG 491, MFG 495, MFG 596

#### ***Transportation Industries:***

MFG 251, MFG 255, MFG 275, MFG 452, MFG 456, MFG 496

#### ***Printing and Publishing Industries:***

GCS 120, GCS 130, GCS 250, GCS 330, GCS 331, GCS 332, GCS 416, GCS 418,  
GCS 430, GCS 581, GCS 585, GCS 590, GCS 601, GCS 635, GCS 636, GCS 670

#### ***Service Industries:***

as approved by advisor

## COURSE DESCRIPTIONS IN GRAPHIC COMMUNICATION SYSTEMS AND TECHNOLOGICAL STUDIES

### Undergraduate

#### **GCS 110. Designing for Graphic Communications**

**Credit 3(2-2)**

This course will acquaint the student with the basic principles and practices in the layout and design of graphic communication products. Mechanical and computer assisted processes will be introduced. Laboratory work is required for this course. (F)

#### **GCS 120. Color Management**

**Credit 3(2-2)**

This course is a study of managing color for print production. It emphasizes theory of color, color models, color generations, color corrections, color matching, color separations, and color proofing. (F:S)

- GCS 130. Graphic Communications Technology** **Credit 3(2-2)**  
Basic principles of graphic design, pre-press preparation, reproduction methods, and bindery operation are taught in a laboratory setting. Historical, socioeconomic, organizational and career opportunities in graphic communications and allied industries are investigated in reference to graphic communications, business and industries. Laboratory work is required. Prerequisite: GCS 110. (S)
- GCS 133. Introduction to Drafting Technology** **Credit 3(2-2)**  
Basic orthographic projection is emphasized. This course is an introduction to drafting technology tools and procedures. Other topics include lettering, geometric construction, pictorials, auxiliaries, sections, and dimensioning. (F;S;SS)
- TECH 210. General Crafts** **Credit 3(2-2)**  
Fundamentals of materials, tools, and skills used in various recreational and developmental craft activities are stressed in this course. (F;S;SS)
- TECH 211. Seminar in Technology Education** **Credit 1(1-0)**  
This course provides actual classroom observations of the public school environment. Students will meet in a seminar to discuss their observations relative to current research and trends in technology education in the public schools. (F;S;SS)
- TECH 218. Introduction to Technology** **Credit 3(2-2)**  
Use of the anthropological approach in studying the evolution of technology and its impact on tool development and technological processes. Students will develop problem-solving and manipulative skills through "hands-on" activities in a multiple activity laboratory. The activities will be developed/designed around the technological systems of communication, manufacturing, transportation, and construction. Students will also develop leadership skills through their involvement in the Technology Education Collegiate Association activities. (F)
- TECH 219. Production Systems** **Credit 3(2-2)**  
This course studies the nature of production and production processes necessary for the development of the competencies required to perform common procedures for manufacturing and construction in technological education. (F;S)
- GCS 233. Drafting of Geometrical Entities** **Credit 3(2-2)**  
This course will emphasize representation of common geometrical entities with points, lines, planes, solids, sectional auxiliary projection, revolution, pictorial drawing, intersection and development. Prerequisite: GCS 133 or consent of advisor. (F;S;SS)
- GCS 234. Computer Aided Drafting** **Credit 3(2-2)**  
This course presents an introduction to computer-aided drafting and design applications. Emphasis is placed on orthographic projections, various coordinate systems, blocks, multilines, and layers. Prerequisite: GCS 133. (F;S;SS)
- GCS 250. Screen Printing Technology** **Credit 3(2-2)**  
This course provides broad and thorough knowledge and skills to transfer images through a stencil to a substrate. Techniques of screen preparations, screen exposing, and screen-printing will be studied. (F;S)
- TECH 261. Introduction to Industrial Education** **Credit 3(3-0)**  
This course is designed to acquaint the student with the underlying philosophy, basic principles, and history of industrial arts and vocational education; this course also includes planning, organizing, administering, supervising, and evaluating vocational and industrial education/technology programs; special emphasis will be given to organization and responsibilities of national, state, and local agencies. (F;S;SS)



- GCS 263. Evolution and Social Implications of Technology Education** **Credit 3(3-0)**  
This course is the study of technology systems. An investigation of past and present impact on the individual and society will take place. Potential of future change influenced by technological change and application is addressed through technological assessment and forecasting. (F;S;SS)
- GCS 292. Technical Communication** **Credit 3(3-0)**  
This course is designed to develop the student's proficiency in researching, organizing, writing, and presenting documents in various areas of technology. Prerequisites: ENGL 100 and 101. (F;S;SS)
- GCS 330. Introduction to Photographic Imaging** **Credit 3(2-2)**  
This course is designed to acquaint the beginner with the fundamental processes of photographic imaging. Historical evolution and modern uses of photography will be studied. Nomenclature, theory and application in picture composition, imaging, and presentation methods will be explored. Legal, safety, and marketing aspects of photography will be addressed. Each student is required to provide a camera with adjustable f-stops and shutter speeds. Laboratory work is required. (F)
- GCS 331. Advanced Photographic Imaging** **Credit 3(2-2)**  
Basic principles of pre-press imaging for mass reproduction purposes are highlighted and reinforced in a laboratory setting. Theories of production, line and halftone copy are applied in class. Alternative technical systems for pre-press image preparation will also be examined. Laboratory is required. (S)
- GCS 332. Digital Image Editing** **Credit 3(2-2)**  
Editing images using digital technology is taught. Hands-on activities are implemented to learn image manipulation techniques. (S)
- GCS 333. Electric/Electronic Drafting** **Credit 3(2-2)**  
Emphasis is on drawing and design of electronic equipment and devices found in the manufacturing, installation, and maintenance industries. Topics include symbols, basic circuits, industrial controls, wiring diagrams, printed circuits, integrated circuits, and electrical building construction wiring diagrams. Prerequisite: GCS 234. (F;S)
- GCS 334. Architectural Drafting** **Credit 3(2-2)**  
Principles of planning residential structures and developing production-working drawings are stressed. Course topics include the design of floor plans, environmental system layouts (heating and air conditioning), and service system plans (plumbing and electrical). Additionally, issues concerning cost estimation, building codes, and general construction techniques will be introduced. Prerequisite: GCS 234. (F;S)
- TECH 382. Computer Applications for Technological Studies** **Credit 3(3-0)**  
This course provides an overview of computer concepts and applications in order to teach problem-solving techniques and interactive applications, and to encourage independent study. Practical problems from academic and real world environments will be integrated into the content. (S)
- TECH 412. Introduction to Construction Systems** **Credit 3(2-2)**  
This course is an introduction to the significance of the evolution of construction and construction systems on human and societal development. An analysis of constructed items such as roadways, low and high rise buildings, tunnels, bridges, dams, towers and other structures will take place. Specific emphasis will be placed on the construction process and systems that involve design, engineering, site preparation, foundations, superstructure, mechanical systems, clearing and finishing the structure. Hands-on activities include modeling, developing prototypes, and problem solving using common construction materials and processes. (F;S)

**TECH 413. Introduction to Manufacturing Systems****Credit 3(2-2)**

This course is a study of manufacturing organization, product design, and production systems. Students will be involved in the design, organization, operation and evaluations of classroom manufacturing systems. The course is an essential component of technology education teacher preparation. (F;S)

**TECH 414. Introduction to Communication Systems****Credit 3(2-2)**

This course is the study of communication systems model and its application in sending and receiving messages. Study and laboratory experience in planning and producing graphic and electronics generated messages to individual and mass audiences will be required. (F;S)

**TECH 415. Introduction to Transportation Systems****Credit 3(2-2)**

This course provides an introduction to the significance of the evolution of transportation and transportation systems on human and societal development. An analysis of the roles of land, air, water, space, and energy systems on rural, urban, and suburban lifestyles will take place. Hands-on activities include the development of models and prototypes of different modes of transportation and transportation systems. (F;S)

**GCS 416. Flexographic Package and Specialty Printing****Credit 3(2-2)**

This course is designed to develop proficiency in flexographic printing and design. It includes the flexographic market, products, substrates, and inks. (F;S)

**TECH 416. Introduction to Biotechnology Systems****Credit 3(2-2)**

This course is an overview of genetic engineering, bio-processing, and antibody production technologies. The focus is on inputs, productive processes, outputs, and impacts on people, the environment and the quality of life. This course is an essential component of technology education teacher preparation. (F;S)

**GCS 418. Web Design for Graphic Communications****Credit 3 (2-2)**

This course is designed to provide tight integration of graphic communications applications and streamlined workflow for students to build Web sites. Students will be able to create interactive graphics and animations. (F;S)

**GCS 430. Technical Illustration and Design****Credit 3(2-2)**

The principles of graphic design, including design process, color, type and art components are discussed. Advanced techniques in computer application and design software are also covered. (F;S)

**GCS 433. Geometric Dimensioning and Tolerancing****Credit 3(2-2)**

This course is a study of the use of basic geometric dimensioning and tolerancing practices and procedures. Students will learn how to analyze a mechanical drawing with regard to the standards currently used in industry and manufacturing, and how to apply these dimensions and notations to a drawing. Prerequisite: GCS 234. (F;S)

**GCS 434. Advanced Architectural Drafting****Credit 3(2-2)**

This course deals with the planning of industrial, commercial and public buildings. Topics include construction and design principles, materials specifications and codes; complete plans (plot, landscaping, framing, electrical and mechanical equipment), details (reinforced concrete, timber and steel), advanced perspective rendering, analytical study of historical and contemporary architecture, materials and methods, and engineering. Prerequisite: GCS 334. (F;S)

**GCS 435. Architectural Design and Modeling****Credit 3(2-2)**

Planning and structural design problems of buildings and their relationship to other buildings and space are emphasized. Urban and rural planning are studied. Landscape and townscape projects are carried to working detail with emphasis placed on techniques of model construction. Prerequisite: GCS 234. (F;S)

- TECH 462. Organization and Management of Technology Education

Credit 3(3-0)

This course emphasizes the following: Study of organization systems impacting technology education - state, local, school district, community, professional. Classroom organization-curriculum, physical facilities; classroom management including safety and liability; and personnel management and record keeping. (F;S)
- TECH 463. Career Guidance and Occupational Information

Credit 3(3-0)

This course covers the principles and techniques of guidance and counseling in junior and senior high schools with emphasis on the study of industrial occupations and guidance as it relates to industrial education classes. (F;S)
- TECH 465. Instructional Analysis Techniques

Credit 3(3-0)

This course covers the following: Analysis of industrial activities and educational goals; identification of technical, occupational, consumer and recreational need of pupils; and delineation of curriculum content and instructional materials. Prerequisite: TECH 463.
- DEMAND
- TECH 510. Research and Development in Technological Systems

Credit 3(2-2)

Research and development in technological systems is the capstone technology education course. This course is a synthesis course where the student researches problems relative to any of the four identified technological systems (i.e., Communication, Transportation, Construction, Manufacturing) and develop solution(s) to the identified problems. The student also will explore the interrelationship among the four technological systems. (F;S)
- GCS 533. Machine Design and Drafting

Credit 3(2-2)

Lecture and laboratory work includes advanced machine drawings, and dimensions, tolerance of fasteners, analysis of motion and motion diagrams. This course includes welding and numerical control, bearings, couplings, gears, jigs and fixtures, and die design. Fundamentals of computer aided design are included. Prerequisite: GCS 234. (F;S)
- GCS 534. Cartographic Drafting and Design

Credit 3(2-2)

This course includes an introduction to design and drafting related to the fields of surveying and cartography. Topics include: topographical maps, contours, plat and plot layouts, and surveying and mapping notations. All work will be drawn using a computer aided design system. Prerequisite: GCS 234. (F;S)
- GCS 536. Computer Aided Design and Geographic Information Systems

Credit 3(2-2)

This course emphasizes the interrelationship between computer aided design (CAD) and geographical information systems (GIS). Use of CAD as a mapping system to model the world and its subsequent progression to GIS will be discussed. The concepts of CAD model, relational model, object model, vector/raster, and the global positioning system will be studied. Applications of CAD and GIS will be learned through practical lab assignments and field research. GCS 234. (F;S)
- TECH 566. Technology Education Teaching Methods

Credit 3(3-0)

Technology education methodology will be studied: Lesson planning, group and individual teaching technique, media development and use, testing and evaluating outcomes in technology courses. Prerequisites: TECH 218, 263, 462, and 510. (F;S;SS)
- GCS 581. Principles of Ink and Paper Technology

Credit 3(3-0)

This course is a study of ink and paper. It includes manufacturing technology, properties, and applications of ink and paper as they relate to graphic communications. (F;S)
- GCS 585. Graphic Communications Production Management

Credit 3(3-0)

This course will acquaint the student with production systems management in graphic communications. Human and technical aspects of project management will be studied. Comparison of



small and large graphic communications production will also be studied. Prerequisite: GCS 130. (F;S)

**GCS 590. Estimating in Graphic Communications** **Credit 3(3-0)**

Cost estimating in graphic communications identifies components of imaging and printing technologies that constitute a manufactured product in the graphic industry. Variables within each of the components will be explored. Appropriate mathematical formulas will be introduced for pricing out production projects to improve cost controls, production techniques, and insure company profitability. Prerequisites: GCS 130 and 581. (F;S)

**Advanced Undergraduate and Graduate Courses**

**GCS 601. Advanced Flexographic Methods** **Credit 3(2-2)**

This course is designed to develop advanced proficiency in flexographic printing. It includes the prediction of future markets, products, substrates, inks, solvents, and industry standards for color processing. (F;S)

**TECH 608. Study of Technology** **Credit 3(2-2)**

This course emphasizes contemporary methods of developing problem-solving skills through the four technologically adaptive systems (communications, construction, manufacturing, transportation), mathematics and science. (F;S)

**GCS 610. Internship in Industry I** **Credit 3(0-7)**

Students participate in an industrial setting during a semester in their major field of interest. They will be evaluated during the internship through a field diary of events and experiences. Three semester hours are the maximum to be earned during semester. (F;S;SS)

**GCS 611. Internship in Industry II** **Credit 3(0-7)**

Students participate in an industrial setting during a semester in their major field of interest. They will be evaluated on reports from industry and a field diary of events and experiences, three semester hours are the maximum to be earned during a semester. (F;S;SS)

**TECH 617. Introduction to Coordination of Industry and Education Partnerships** **Credit 3(3-0)**

This course examines the interrelationship, organizational structure, and logistics of industry and education partnerships. Topics include establishing guidelines, developing networks, coordinating personnel, supervising participants, and evaluating performance. (F;S;SS)

**TECH 618. Technological Education for Special Needs Students** **Credit 3(3-0)**

Opportunities are provided for teachers, counselors, and administrators to improve their skills in working with disadvantaged/handicapped learners in technological education. Emphasis will be placed on motivational creative instructional strategies, discipline, drug awareness, and module development. (F;S;SS)

**TECH 619. Construction Systems for Technological Education** **Credit 3(2-2)**

The evolution of construction and construction systems on human and societal development will be discussed. Teaching strategies regarding construction systems including design, engineering, site preparation, foundations, superstructure, mechanical systems, and clearing and finishing the structure will be studied. Laboratory activities appropriate for secondary, post-secondary, and industrial settings will be included. (F;S;SS)

**TECH 620. Manufacturing Systems for Technological Education** **Credit 3(2-2)**

This course will cover the organization, product design, and production systems associated with manufacturing. It will emphasize teaching strategies and curriculum development in relation to manufacturing systems. Laboratory activities appropriate for secondary, post-secondary, and industrial settings will be included. (F;S;SS)



**TECH 621. Communication Systems for Technological Education** **Credit 3(2-2)**

This course studies the communication systems model and its application to sending and receiving messages. Topics include planning and producing graphically and electronically generated messages to individual and mass audiences. Laboratory activities will be included appropriate for secondary, post-secondary, and industrial settings. (F;S;SS)

**TECH 622. Transportation Systems for Technological Education** **Credit 3(2-2)**

The significance of the evolution of transportation and transportation systems on human and societal development will be studied. Topics include the roles of land, air, water, space, and energy systems on rural, urban, and suburban lifestyles. Laboratory activities will be included appropriate for secondary, post-secondary, and industrial settings. (F;S;SS)

**TECH 623. Research and Development in Technological Education** **Credit 3(2-2)**

This is a synthesis course where students research problems relative to any one of the four technological systems (Communications, Transportation, Construction, Manufacturing) and develop solution(s) to the identified problem(s). The interrelationship among the four technological systems will be explored. Laboratory activities will be included appropriate for secondary, post-secondary, and industrial settings. (F;S;SS)

**TECH 626. Curriculum Modification in Technological Education for Special Needs Populations** **Credit 3(3-0)**

This course examines program modifications for disadvantaged/handicapped learners in technological education. Topics include curriculum adaptation, instructional planning, teaching strategies, media development, and performance assessment for special needs learners. (F;S;SS)

**GCS 630. Multimedia and Videography** **Credit 3(2-2)**

This course covers the development and utilization of multimedia presentations and videography in the educational environment. Topics include principles of composition, planning, editing, and producing multimedia presentations appropriate for educational or industrial settings. Computers and software packages will be used to develop the presentations. (F;S;SS)

**GCS 631. Advanced Computer Aided Design** **Credit 3(2-2)**

This course focuses on the development of knowledge and skills associated with solid modeling and the use of computer software to generate these models. Emphasis will also be placed on the creation of wire-frame and surface models. Analysis, fabrication and documentation of these models will be addressed. Prerequisite: GCS 234. (F;S)

**GCS 632. Graphic Animation** **Credit 3(2-2)**

This course deals with the creation and manipulation of computer generated geometric shapes and models. Topics include creation of 3D scenes, assignment of materials, lights and textures, keyframing, rendering, and animation. Prerequisite: GCS 631. (F;S)

**GCS 633. Advanced Machine Design and Drafting** **Credit 3(2-2)**

This course covers advanced drafting and design techniques associated with machine components and assembly. Topics include tool design and material selection, work-holding principles, design of jigs, fixtures and press working tools, inspection and gaging, joining processes, modular tooling, and economics of design. Prerequisite: GCS 533. (F;S)

**GCS 634. Advanced Multimedia and Videography** **Credit 3(2-2)**

This course provides advanced strategies and techniques in the development of multimedia presentations and videography. State of the art equipment will be used in addition to computers and software packages to produce professional presentations. (F;S)

**GCS 635. Advanced Principles of Graphic Communications Technology** **Credit 3(2-2)**

Advanced principles in graphic reproduction will be studied as well as color applications, photographic applications, design and pre-press techniques. Technical experiences in reproduction methods and quality control will also be required. (F;S)

**GCS 636. Electronic Imaging and Distance Learning** **Credit 3(2-2)**

This course integrates the strategies and techniques of electronic imaging into distance learning applications. Areas of emphasis include web page development and management unique to distance learning delivery systems for the Internet. (F;S)

**GCS 637. Industrial and Customer Relations in Graphic Communications** **Credits 3(2-2)**

This course focuses on industrial and customer relations within the field of graphic communications. Responsibilities and duties of the manager and his/her relationship to higher-level supervisors, subordinates, associates and customers are examined. Emphasis is placed on developing skills essential for persuasive communication. (F;S)

**GCS 644. Advanced Architectural Drafting and Design** **Credit 3(2-2)**

This course covers advanced drafting and design techniques associated with the building industries. Topics include the development of working drawings, site plans, elevations, sections, and details in accordance with building codes. Upon completion the student should be able to plan and develop architectural drawings that comply with accepted architectural standards and procedures. Prerequisite: GCS 234. (F;S)

**TECH 644. Occupational Exploration for Middle Grades** **Credit 3(3-0)**

Designed for persons who teach or plan to teach middle grades occupational exploration programs. Emphasis will be placed on occupational exploration in the curriculum, sources and uses of occupational information, approaches to middle grades teaching, and philosophy and concepts of occupational education. (F;S;SS)

**TECH 660. Career Development and Work-based Learning** **Credit 3(3-0)**

This course covers implementation strategies for various work-based learning programs that will prepare youth to enter the workplace. Emphasis will be placed on going beyond the classroom into the community to develop workplace knowledge and skills. (F;S;SS)

**TECH 661. Workforce Development Program Planning and Management** **Credit 3(3-0)**

This course covers principles and strategies of program planning and management for workforce development. Emphasis will be placed on scheduling, federal and state regulations, procedures, and special issues. (F;S;SS)

**TECH 662. Technological Education Course Construction** **Credit 3(3-0)**

Selecting, organizing, and integrating objectives, content, media and materials appropriate to technological courses will be discussed. Topics include strategies and techniques of designing and implementing group and individual teaching-learning activities, constructing teacher-made instructional aides and devices, and curriculum planning and design. (F;S;SS)

**TECH 663. History and Philosophy of Technological Education** **Credit 3(3-0)**

This course examines the chronological and philosophical development of technological education with special emphasis on its growth and function in American schools. (F;S;SS)

**TECH 665. Middle Grades Industrial Laboratory** **Credit 3(3-0)**

Course organization, teaching strategies, resource and facilities for teaching industrial technological career exploration in middle grades are stressed. Emphasis is on occupational clusters in manufacturing, construction, communication, transportation, fine arts, and public service. (F;S;SS)

**GCS 667. Independent Studies in Technological Education I** **Credit 3(3-0)**

This course involves intensive study in the field of technological education under the direction of a faculty advisor. Prerequisite: Approval of graduate studies coordinator. (F;S;SS)

**GCS 668. Independent Studies in Technological Education II** **Credit 3(3-0)**

This course involves intensive inquiry in the field of technological education under the direction of a faculty advisor. Prerequisite: Approval of graduate studies coordinator. (F;S;SS)

**TECH 669. Safety in the Instructional Environment of Technological Education**

**Credit 3(3-0)**

This course examines the principles and techniques of organizing and supervising safety in technological education. Topics include instructional strategies, state and national laws, special hazards, color-coding, and accident analysis. (F;S;SS)

**GCS 670. Electronic Imaging in Graphic Communications**

**Credit 3(2-2)**

Theory, principles and practices of electronic non-impact printing are investigated in class. Students will be given opportunities to explain, visit and utilize current non-impact printing systems through visits to industrial settings, classroom projects and special demonstrations. (F;S;SS)

**TECH 670. Introduction to Workplace Training and Development**

**Credit 3 (3-0)**

This course provides an overview of the field of training and development. Management concerns related to organizing, operating, and financing training and development programs are discussed. Roles common to practitioners across the broad field of human resource development are covered. Interpersonal perspectives and implications for the future are included. (F;S;SS)

**TECH 671. Methods and Techniques of Workplace Training and Development**

**Credit 3(3-0)**

Emphasis is placed on the methods and techniques common to exemplary training programs in this course. Designing learning programs and selecting appropriate media methods and resources using sound theoretical framework are the goal. Evaluation of programs and instruction is discussed. Prerequisite: Approval of graduate coordinator. (F;S;SS)

**TECH 672. Curriculum Development Using Microcomputers in Technological Education**

**Credit 3(3-0)**

This course will focus on the theory, principles, concepts, and philosophy of curriculum development. Topics include utilization of microcomputers, creation of learning activity packages, and integration of resources. (F)

**TECH 682. Computer Applications for Education and Industrial Training**

**Credit 3(2-2)**

This course deals with strategies and techniques for the utilization of the computer for networking, videoconferencing, and distance learning. It also covers satellite and teleconferencing in addition to information services and the Internet as vehicles to assist in the educational process. (F;S;SS)

**DIRECTORY OF FACULTY**

- Elazer J. Barnette** .....

**Professor and Dean**
- B.S., West Virginia State College; M.S., Ed.D., North Carolina State University
- Vincent W. Childress** .....

**Associate Professor**
- B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University
- Robert Cobb, Jr.** .....

**Assistant Professor**
- B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Ray J. Davis** .....

**Professor and Associate Dean**
- B.S., University of Maryland Eastern Shore; M.S., Ph.D., Ohio State University
- Cynthia C. Gillispie-Johnson** .....

**Associate Professor**
- B.S., North Carolina A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University



- Nancy L. Glenz** ..... **Professor and Chairperson**  
B.S., Trenton State College; M.S., North Carolina A&T State University, M.S., Ph.D., Michigan State University
- Arjun Kapur** ..... **Associate Professor**  
B.S., M.S., Punjab University; M.E., McGill University; Ph.D., Indian Institute of Technology
- Devang P. Mehta** ..... **Assistant Professor**  
B.S., University of Bombay; M.A., DIT, University of Northern Iowa
- Craig Rhodes** ..... **Assistant Professor**  
B.S., M.S., North Carolina A&T State University; Ph.D., University of Wisconsin-Stout



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## **Department of Manufacturing Systems**

<http://www.ncat.edu/~sot/mfg>

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**Marcus D. Tillery, Chairperson**

### **DEGREES OFFERED**

Manufacturing Systems – Bachelor of Science

Industrial Technology – Master of Science\*

*\* See the Graduate School Bulletin*

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree program in the Department of Manufacturing Systems is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

All Manufacturing Systems majors must complete 126 semester hours of University courses. A minimum of 30 semester hours must be completed in technical specialization in manufacturing. A minimum grade of "C" must be earned in all major courses.

Graduates of technical institutes and community colleges who have earned the Associate Degree in technology areas may be admitted to the manufacturing systems program as juniors. Specific course requirements for these students will have to be made on an individual basis after their previously earned credits have been assessed. The typical student in this program will be required to take at least 63 additional semester hours.

Any student transferring to the Department of Manufacturing Systems from other disciplines must have a minimum of 2.0 grade point average.

### **ACCREDITATION**

The manufacturing systems program is accredited by the National Association of Industrial Technology.

### **CAREER OPPORTUNITIES**

Graduates of the manufacturing systems program are very successful in receiving employment in industrial, manufacturing, and service areas. Positions typically include supervision, technical management, manufacturing management, facilities planner, quality manager, service management, production engineering, quality control, automation and high-technology application areas.

### **REQUIRED MAJOR COURSES FOR MANUFACTURING SYSTEMS**

MFG 100	MFG 470	MFG 480
MFG 254	MFG 471	MFG 491
MFG 276	MFG 472	MFG 493
MFG 293	MFG 474	MFG 495
MFG 300	MFG 475	MFG 496

## CURRICULUM GUIDE FOR MANUFACTURING SYSTEMS

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
CHEM 106	4	GCS 234	3
GCS 133	3	MFG 191	3
MFG 100	<u>1</u>	MFG 276	<u>3</u>
	15		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 225	4	PHYS 226	4
Social Science Elective <sup>1</sup>	3	Social Science Elective <sup>1</sup>	3
ECT 211	3	MFG 470	3
MFG 293	3	MFG 471	3
GCS 292	<u>3</u>	ECT 101	<u>3</u>
	16		16

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MFG 300	1	Humanities Elective <sup>2</sup>	3
PHED	2	PSYC 445	3
BUAD 422	3	ACCT 203	3
Humanities Elective <sup>2</sup>	3	MFG 493	3
MFG Specialization <sup>3</sup>	3	MFG Specialization <sup>3</sup>	3
SPCH 250	<u>3</u>	Free Elective	<u>3</u>
	15		18

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MFG 495	3	OSH 393	3
CM 592	3	Free Elective	6
MFG Specialization <sup>3</sup>	<u>9</u>	MFG Specialization <sup>3</sup>	<u>6</u>
	15		15

Total Credit Hours: 126

*In order to graduate, each student, beginning with the 1995-96 academic year, will be required to complete a three-hour course of African/African-American Studies and a three-hour course of Global Studies.*

*Manufacturing Core includes MFG 276, 470, 471, 493, and 21 semester hours of recommended courses from automation system, polymer science/material science, or technical management blocks.*

## COURSE DESCRIPTIONS IN MANUFACTURING SYSTEMS

### **MFG 100. Orientation to Technology** **Credit 1(1-0)**

An overview of the School of Technology and its programs are explained along with what is expected of majors, their preparation, and the opportunities available upon graduation. Basic concepts such as dependability, dedication, technical knowledge, communications, cooperativeness, self-motivation, and dressing for success are discussed. (F;S)

### **MFG 191. Introduction to Manufacturing Processes** **Credit 3(2-2)**

This course provides an introduction to basic manufacturing processes to include forming, separation conditioning, and assembly processes. An overview of production management and metrology is introduced. (F;S)

### **MFG 251. Internal Combustion Engine** **Credit 3(1-3)**

This course is a study of principles, design and chemistry of combustion as it relates to performance, fuel, economy and emissions. (F;S)

- MFG 252. Automotive Legislation for Consumers** **Credit 3(2-2)**  
This course is a study of State and Federal rules and regulations governing the automotive industry. (F;S)
- MFG 254. Automation Identification and Bar Coding** **Credit 3(1-3)**  
The science of measurement, inspection and bar coding through automation will be covered. (F;S)
- MFG 255. Automotive Power Transmission** **Credit 3(1-3)**  
This course provides a study of fundamental principles of the automotive power train components. Emphasis is on mechanical and fluid power principles, transmitting power, controlling components, brakes, steering, etc. (F;S)
- MFG 275. Automotive Emission** **Credit 3(2-2)**  
This course is a study of mobile air pollution sources as it relates to gasoline powered vehicles. A familiarization of the causes and effects of auto exhaust emission will also be covered. (F;S)
- MFG 276. Introduction to PLC's and Robotics** **Credit 3(1-3)**  
This course is a study of sensors, computers and activators as a feedback system in the control of fuel, spark and emission control system. (F;S)
- MFG 293. Power Technology** **Credit 3(1-3)**  
Basic concepts of energy and power technology, including mechanical, hydraulics, pneumatics and electrical methods of transmitting and controlling power sources will be covered. (F;S)
- MFG 300. Technology Seminar** **Credit 1(1-0)**  
This course is designed to review and acquaint students with the necessary skills to present themselves and their credentials to various groups. Video/oral presentations as well as written and computer generated graphic presentations will be made. (F;S)
- MFG 451. Dimensional Metrology** **Credit 3(2-2)**  
This course covers dimensional metrology terminology, measurement of surface texture, flatness, squareness, angles, roundness, and concentricity. Areas of study include contact and non-contact measuring methods and equipment performance. (F;S)
- MFG 452. Automotive Service Management** **Credit 3(2-2)**  
This course provides an introduction to automotive service management. Emphasis is on the application of management skills, techniques, methods of problem solving for efficient and effective management and marketing controls. (F;S)
- MFG 455. Image and Data Processing Technology** **Credit 3(1-3)**  
This course is a study of the techniques and processes of collecting, analyzing, manipulating and disbursement of automotive data using electronic devices and systems. (F;S)
- MFG 456. Energy, Power, Instrumentation & Control** **Credit 3(1-3)**  
This course provides an advanced study of energy and power transmission and the integration of electro-mechanical fluid power for instrumentation and control will be provided. (F;S)
- MFG 470. Industrial Materials and Processes** **Credit 3(1-3)**  
This course emphasizes the nature, origin and the conversion into manufactured goods of metals, plastics, woods, ceramics, composites and synthetic materials. (F;S)
- MFG 471. Metallic Material Processes** **Credit 3(1-3)**  
This course is a study of metallic material properties, fabricating equipment and methods utilized in the production of metallic products. (F;S)
- MFG 472. Numerically Controlled Machine-Tool Technology** **Credit 3(1-3)**  
Basic manufacturing processes with computer-numerically controlled (CNC) machine-tools will be covered. Course includes programming and machine language. (F;S)



- MFG 473. Advanced CNC-Machine-Tool Technology** **Credit 3(1-3)**  
 This course provides study in advanced numerically controlled (CNC) machine-tool technology with precision work performed on lathes, mining machines, laser machining and surface drilling workstations. (F;S)
- MFG 474. Polymer Process I** **Credit 3(1-3)**  
 This is a fundamental lecture-laboratory course concerning properties and use of polymers in manufactured products. The laboratory includes polymer identification. (F;S)
- MFG 475. Polymer Process II** **Credit 3(1-3)**  
 This is an advanced course dealing with the use of polymers in manufacturing process. The course is laboratory-oriented to provide experience with injection molding, extrusion, blow molding, rotational casting, thermoforming and other basic plastics processes. Also included is tooling design of injection molds, compression molds and dies. (F;S)
- MFG 480. Mechanical Design and Manufacturing Problems** **Credit 3(1-3)**  
 This is a basic course in mechanical design, problems and manufacturing procedures. Course includes machine-tool-die design using CAM software to generate machine codes and parts drawing. (F;S)
- MFG 481. Metallurgy** **Credit 3(2-2)**  
 Metals, their properties, selection, and production are studied. Phase diagram, thermal treatment and strengthening mechanisms are discussed. Lab exercises will cover specimen preparations, metallography techniques, and microstructural analysis. (F;S)
- MFG 491. Statics and Mechanics of Materials** **Credit 3(2-2)**  
 This course is a study of static equilibrium conditions and mechanical behavior of materials under loading. Applications are made in the area of bars, columns, joint pressure vessels, shafts and beams. Testing materials for measuring mechanical properties will be experienced. (F;S)
- MFG 493. Manufacturing Planning and Management** **Credit 3(2-2)**  
 This course includes a practical approach to management to include organizing, planning, controlling and development of operations used in decision making and problem-solving in a manufacturing environment. (F;S)
- MFG 495. Statistical Process/Quality Control** **Credit 3(2-2)**  
 This course emphasizes a practical approach to quality control in industries. Includes quality and process improvement through measurement analysis and diagnosis utilizing basic concepts of statistics. (F;S)
- MFG 496. Electro-Mechanical Control Systems** **Credit 3(1-3)**  
 This course is a general study of electromechanical control systems. Emphasis will be placed on programming PLC'S, robots and interfacing sensors, transducers, etc., with other components for output signals. PC computers will be an integral part of this class. (F;S)
- MFG 497. Cooperative Training in Industry I** **Credit 3(3-0)**  
 Students must be in industry full time for one semester in their major field of work and complete any University co-op requirements. The student will be evaluated on reports from industry. The report will be in standard format. The hours earned will be credited towards required technical electives in the industrial technology curriculum. Three semester hours are the maximum to be earned under this arrangement in any one semester. Six semester hours are the maximum to be earned in the co-op arrangement in the Industrial Technology curriculum. (F;S)
- MFG 498. Cooperative Training in Industry II** **Credit 3(3-0)**  
 The description of this course is the same as MANU-497: Cooperative Training in Industry I, and is normally the second co-op experience of the student. (F;S)



**MFG 576. Manufacturing-Production and Control****Credit 3(2-2)**

This course provides a comprehensive study of manufacturing operation and production control. It includes materials handling and just-in-time manufacturing (JIT), manufacturing requirement planning (NW I & II) and continuous flow manufacturing. (F;S)

**MFG 591. Early Manufacturing Involvement****Credit 3(2-2)**

This course provides a comprehensive study of Early Manufacturing Involvement (EMI) to include product value analysis, parametric cost estimates, scheduling and economic justification of product release. (F;S)

**MFG 596. Automated Manufacturing****Credit 3(1-3)**

This course provides a basic understanding of automation and its various applications in manufacturing. Implications of Computer Integrated Manufacturing (CIM) and robotic work cells towards improving productivity are emphasized. (F;S)

**MFG 599. Independent Study****Credit 3(3-0)**

The student selects a technical problem in his major area for special research and study in consultation with a faculty member in his area of interest. He will spend a minimum of six hours per week in library research or laboratory experimentation. A technical report in standard format will be required for completion and must be approved by two department faculty members. (F;S)

**MFG 651. Principles of Robotics****Credit 3(1-3)**

This course emphasizes the study of robotics principles and logic control manipulators towards the total integration into a flexible manufacturing system. (F;S)

**MFG 673. Industrial Productivity Measurement and Analysis****Credit 3(2-2)**

Study of work measurement and method analysis towards establishing work standards and measuring productivity in industries. (F;S)

**MFG 674. Study of Automation and Control System****Credit 3(1-3)**

This course emphasizes the study of automation and control system to include application of PLC, CAD, CAM, CNC, sensors and robotics to simulate a total computer integrated manufacturing (CIM environment). (F;S)

**MFG 690. Special Problems in Manufacturing Systems****Credit 3(0-4)**

Intensive study in the field of Industrial Technology under the direction of a faculty advisor will be undertaken. (F;S)

## DIRECTORY OF FACULTY

- William K. James** ..... **Associate Professor**  
 B.S., Iowa State University; M.S., DIT, University of Northern Iowa
- John H. Martin** ..... **Adjunct Professor**  
 B.A., Warren Wilson College; M.A., Ed.D., West Virginia University
- Sheila E. Rowe** ..... **Assistant Professor**  
 B.A., Roosevelt University; M.S., Ph.D., Iowa State University
- Ji Y. Shen** ..... **Associate Professor**  
 B.S., Northwestern Polytec University; M.S., Nanjing Aeronautical University; Ph.D., Old Dominion University
- Marcus D. Tillery** ..... **Associate Professor and Chairperson**  
 B.S., North Carolina A&T State University; M.S., Ph.D., Iowa State University
- Earnest L. Walker** ..... **Professor and Associate Dean**  
 B.S., University of Arkansas, Pine Bluff; M.S., University of Arkansas, Fayetteville; Ph.D., Southern Illinois University
- Yuqiu You** ..... **Adjunct Instructor**  
 B.E., Huazhong University of Science and Technology; M.S., Morehead State University

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## COLLEGE OF ENGINEERING

<http://www.eng.ncat.edu>

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**Joseph Monroe, Dean**

**Sanjiv Sarin, Associate Dean**

**Leotis Parrish, Assistant Dean for Student Development**

The College of Engineering consists of five academic departments: Civil Architectural Agricultural and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Industrial and Systems Engineering, and Mechanical and Chemical Engineering. These departments together offer eight Bachelor of Science, six Master of Science and three Doctor of Philosophy degree programs. These include Bachelor of Science degrees in architectural; bioenvironmental, (previously known as agricultural and biosystems), chemical; civil; electrical; industrial; and mechanical engineering and computer science. In addition, Master of Science degrees in chemical engineering, civil engineering, electrical engineering, industrial engineering, mechanical engineering, and computer science, and Doctor of Philosophy degrees in electrical, industrial and mechanical engineering are available.

For many years, the College of Engineering has been the nation's leading producer of African American engineers at the bachelor's level and the second largest producer at the master's levels. Approximately one-third of the students are women.

### ACCREDITATION

All undergraduate Engineering programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET) and the Computer Science program is accredited by the Computer Science Accreditation Commission of the Computer Science Accreditation Board (CSAC-CSAB).

### DEGREES OFFERED

Bioenvironmental Engineering – Bachelor of Science

Architectural Engineering – Bachelor of Science

Chemical Engineering – Bachelor of Science

Civil Engineering – Bachelor of Science

Computer Science – Bachelor of Science

Electrical Engineering – Bachelor of Science

Industrial Engineering – Bachelor of Science

Mechanical Engineering – Bachelor of Science

Chemical Engineering – Master of Science\*

Civil Engineering – Master of Science\*

Computer Science – Master of Science\*

Electrical Engineering – Master of Science\*

Industrial Engineering – Master of Science\*

Mechanical Engineering – Master of Science\*

Electrical Engineering – Doctor of Philosophy\*

Mechanical Engineering – Doctor of Philosophy\*

Industrial Engineering – Doctor of Philosophy\*

*\* See the Graduate School Bulletin*

### MISSION

The Mission of the College of Engineering at North Carolina A&T State University is to maintain quality educational programs that are responsive to student needs, interdisciplinary

research programs that involve strategic partnerships to extend the frontiers of knowledge, and outreach programs to serve the Piedmont Triad community, the state, and the nation.

### **OBJECTIVES**

The programs of study are aimed at preparing a student for engineering practice in all phases of his/her chosen field. The educational objectives College of Engineering are as follows:

1. To prepare the student for an active career in his/her chosen discipline within the profession.
2. To provide the student a comprehensive background in all phases of the engineering design process.
3. To provide the student a basic knowledge of the mathematical and natural sciences upon which the practice of engineering depends.
4. To develop the student's ability to analyze and interpret data
5. To improve the students' communication, interpersonal and teamwork skills
6. To develop the student's understanding of professional and ethical responsibilities
7. To develop the student's judgment to utilize effectively and economically the materials and forces of nature for the benefit of humankind.
8. To develop in the student an appreciation for lifelong learning.
9. To develop in the student an awareness of social, political and global issues that impact the profession
10. To develop the student's ability to effectively utilize modern technology.

### **UNCONDITIONAL ADMISSION**

Admission into the college of engineering is coordinated through the University's Office of Admissions. Admission decisions are based on SAT or ACT scores, class rank and GPA. For admission to all programs in the college of engineering, the applicant must present the following minimum units of high school credit:

1. English - 4 units emphasizing grammar, composition and literature
2. Science - 3 units (including at least one unit in a biological or life science, one unit in a physical science, and one unit in Chemistry. At least one unit should have a laboratory component.)
3. Mathematics - 4 units (including Algebra I, Algebra II, Geometry, and an additional unit beyond Algebra II - e.g., Trigonometry, Math Analysis, etc.). Students entering with a deficiency in mathematics must begin with Pre-Engineering Mathematics, which is not counted towards the required semester hours for graduation. In this case the normal mathematics sequence is shifted one semester.
4. Social Sciences - 2 units (including at least one unit in United States History)
5. Foreign Language - 2 units are recommended in one foreign language.
6. Electives - 3 units (no more than 2 units in vocational subjects and 2 units in the disciplines of Music and Physical Education)

Transfer students are accepted into the college of engineering if the applicant has a minimum 2.5 GPA if transferring from a four-year institution with an accredited engineering program, or a minimum 3.0 GPA if transferring from other institutions.



## **CONDITIONAL ADMISSION**

Conditional admission to engineering programs may be given to some freshman students who do not otherwise meet admission criteria. These students will receive advising services directly from engineering professors. All conditionally admitted students will be required to document that they have taken Algebra I, Algebra II, Geometry and an additional unit beyond Algebra II (for example, Trigonometry, Mathematical Analysis, etc.).

Based on deficiencies noted, conditionally admitted students will be advised to register for additional freshman level courses prior to taking required courses and may even be advised to take a reduced course load. Students should consult their advisor for specific requirements. It should be noted that these students may not be able to graduate in four years. Based on a review of the student's academic record, courses such as College Algebra and Trigonometry, Pre-Calculus, Introductory Chemistry and Introductory Physics may be assigned. These courses are preparatory in nature and do not count toward degree credit in engineering and computer science. All students admitted under this policy will undergo an academic review after one year's courses. Based on a cumulative GPA of 2.5 and a "C" or better in assigned courses, conditionally admitted freshmen will be unconditionally admitted to their intended engineering major. Students who do not meet the requirements of the one-year review will be transferred to The Center for Student Success for further advisement.

Transfer students may also be conditionally accepted into engineering programs. All students transferred into engineering programs under this policy will undergo an academic review after one semester. The conditions for transfer will be stipulated by the department chair in writing and will form the basis for the review after one semester. After satisfaction of the transfer conditions, conditionally admitted transfer students will be unconditionally admitted to their intended engineering major. Students who do not meet the requirements of the review will be transferred to the Center for Student Success for further advisement.

## **TRANSFER CREDIT EVALUATION**

Students are advised to receive prior approval from their academic advisor and department chairperson for courses to be considered for transfer credit from other colleges and universities. The Office of Admissions may recommend a preliminary award of transfer credits. However, the authority and responsibility for the final decision for approval of transfer credits rests with the academic departments.

## **ADVISING**

All students will be assigned an academic advisor. Students are expected to meet their advisor for help with the following issues:

- Interpreting university, college and department regulations
- Providing general information, advice, and academic recommendations
- Planning course selections. Students must consult their advisor before registering for courses.
- Ensuring that students take electives that satisfy University and ABET category requirements
- Helping students to understand the degree to which they must assume responsibility for their program planning
- Providing vocational and career guidance
- Referring students to appropriate individuals and offices when further assistance is needed.

## MATHEMATICS AND CHEMISTRY PLACEMENT

Admitted (conditionally or unconditionally) students must demonstrate proficiency in mathematics and chemistry before being permitted to take freshman Mathematics and Chemistry courses. Mathematics proficiency can be demonstrated through acceptable scores on SAT or ACT Math, AP Calculus, or Math Placement test. Otherwise the student will be required to first take MATH 110 or 111. Chemistry proficiency can be demonstrated through acceptable scores on High School Chemistry, AP Chemistry, or Chemistry Placement Test. Otherwise the student will be required to first take CHEM 099.

## MINIMUM C GRADE POLICY

This policy applies to all engineering programs in the college of engineering. Specifically, when an engineering program requires students to take any of the following courses, students will have to obtain a minimum grade of "C" in each such course to meet graduation requirements. Furthermore, a minimum grade of "C" on any such course will be required to satisfy prerequisite requirements of subsequent courses. This applies to each Bachelor of Science curricula in the college of engineering - both to courses that are explicitly required and those that are recommended as elective courses. The complete set of courses with this "Minimum C" requirement is listed below:

- |            |            |            |            |
|------------|------------|------------|------------|
| • CHEM 106 | • MATH 224 | • PHYS 242 | • INEN 270 |
| • CHEM 107 | • MATH 231 | • GEEN 100 | • MEEN 260 |
| • MATH 131 | • MATH 431 | • ELEN 440 | • MEEN 313 |
| • MATH 132 | • PHYS 241 | • INEN 260 | • MEEN 413 |

Individual programs may have additional courses that require a minimum C grade. Please refer to the requirements of each program stated in this bulletin or in the program handbook available from the department chairperson.

## GLOBAL AND AFRICAN AMERICAN STUDIES REQUIREMENT

All College of Engineering students must take at least six credits from the Humanities column and at least six credits from the Social Sciences column. Of these, at least three credits must be from the African American Studies row (either African American Studies Humanities or African American Studies Social Sciences) and at least three credits must be from the Global Studies row (either Global Studies Humanities or Global Studies Social Sciences). A single course can fulfill both a row and column requirement.

Note that the table shown below is a general guideline. Individual programs may require specific courses to satisfy the Humanities, Social Sciences, African American Studies and Global Studies requirements. Please consult the curriculum requirements of the programs for specifics.

	<b>Humanities 6 credits required from this column</b>	<b>Social Sciences 6 credits required from this column</b>
<b>African American Studies</b> At least 3 credits required from this row	ENGL 333, 650, 652, 654, 656, 658, 660, FOLA 417*, 618*, MUSI 220, 221, THEA 630	ECON 615, HIST 201, 202, 215*, 216*, 310, 311, 320*, 328, 412*, 416, 615, 616*, POLI 220, 445*, 446*, SOCI 314, SPCH 302
<b>Global Studies</b> At least 3 credits required from this row	FOLA 100, FOLA 101, FOLA 102, FOLA 103, FOLA 104, FOLA 105, FOLA 106, FOLA 107, FOLA 108, FOLA 109, FOLA 110, FOLA 111, FOLA 417*, FOLA 450, FOLA 618*	AERO 421, 422, ECON 505, 537, HIST 100, 101, 210, 215*, 216*, 303, 304, 312, 320*, 321, 322, 327, 330, 331, 332, 405, 412*, 605, 616*, 626, 630, 631, POLI 310, 444, 445*, 446*, 544, 646, SOCI 300
<b>Other</b>	AREN 112, ART 224, 225, 400, 459, 520, THEA 201, 630, 631, ENGL 200, 201, 202, 203, 204, 220, 221, 333, 420, 425, 603, 650, 652, 654, 656, 658, 660, MUSI 216, 217, 220, 221, HIST 262, PHIL 260, 261, 262, 308, 309	AGEC 330, 440, 530, ECON 300, 301, 401, 405, 410, 420, 425, 501, 515, 601, 610, HIST 204, 205, 208, 220, 225, 230, 300, 302, 305, 306, 307, 401, 402, 407, 410, 442, 450, 600, 603, 606, 607, 610, 620, GEOG 200, 210, 319, 322, POLI 200, 210, 250, 400, 410, 440, 410, 420, 430, 448, 541, 542, 543, 640, 642, 643, 653, PSYC 320, 324, 325, 420, 434, 439, 445, 526, 541, 545, 550, 644, 645, SOCI 100, 200, 301, 304, 313, 406, 420, 673, SOWK 312, 313, 314, 370, 372, 373, 374, 503

*\* Note that these courses can be considered either as Black Studies or Global Studies, but no single course can fulfill both requirements simultaneously.*

## **PREREQUISITES**

Students are advised to follow their prescribed curriculum, especially noting the prerequisite requirements. It should be noted that prerequisites are subject to change and will normally be effective immediately. It is the responsibility of the student to understand and follow prerequisite requirements. The department chairperson reserves the right to drop a student from any course if the proper prerequisites are not satisfied. Any prerequisite waivers must be formally approved by the student's advisor and department chairperson.

## **GRADUATION UNDER A GIVEN CATALOG**

A student may expect to earn a degree in accordance with the requirements of the curriculum outlined in the catalog in force when he or she first entered the University, provided the courses are being offered. Moreover, he or she must complete these requirements within six



years. In addition, a student may graduate under any subsequent catalog published while he or she is a student; in that case, he or she must meet all requirements of the catalog he or she elects. The approval of the advisor, department chairperson and the dean is needed for any course substitutions.

## **LICENSURE AS A PROFESSIONAL ENGINEER**

The North Carolina Board of Examiners for Engineers and Surveyors is charged with the responsibility of issuing a certificate of licensure to those determined to be properly qualified. In order to be licensed to practice engineering in North Carolina, an individual, in addition to paying the required fees, must be of good character and reputation, must satisfactorily pass the examinations administered by the Board, and must submit evidence of education, and a specific record of progressive engineering work of a nature and level acceptable to the Board.

To prepare for engineering licensure, all engineering majors are encouraged to prepare for and take the Fundamentals of Engineering (FE) Examination during their Senior Year. An FE review course is offered to all seniors in the college of engineering.

After successful completion of the Fundamentals Examination, and upon completion of a minimum of four (4) years of progressive engineering experience, applicants are eligible to apply for the Engineering Principles and Practice Examination. Upon successful completion of the requirements for licensure, the Board will approve the applicant for licensure. For more information, visit the website [www.ncbels.org](http://www.ncbels.org).

## **COOPERATIVE EDUCATION PROGRAM**

Cooperative Education (Co-op) is a highly recommended, voluntary plan of education in which students alternate sessions of full-time work with sessions of full-time study. Usually, the plan is a five-year professional development experience, designed to combine practical on-the-job experiences with the classroom training of a four-year college curriculum. It helps students integrate theory and practice, confirm career choices, investigate potential job opportunities, and become better graduates. At the same time, it allows students to earn money and help finance their education. Cooperative Education provides a valuable opportunity for students, employers, and the university to work together to benefit one another.

How is Co-op different than an Internship? An internship is a flexible employment arrangement, negotiated and arranged on a case-by-case basis between the student and employer. By contrast, the Cooperative Education Program is a structured program with defined schedules and student, employer, and university responsibilities. Once you become a co-op student, you will continue with your chosen employer throughout the entire program, although the employer site location could change during the program. At least four semesters of work are required alternating with academic semesters. After qualifying for the Co-op Program your first year (GPA above 2.8), you continue to be eligible to remain in the program by maintaining satisfactory academic (GPA above 2.8) and work records. Reasons to Co-op instead of Intern include:

- Co-ops receive job offers from their employers about two-thirds of the time; Co-ops receive more job offers than interns; and some companies during economic slowdowns only hire co-ops.
- Freshman and Sophomores are given hiring preference with Co-ops, whereas Juniors are given preference for Interns.



- Co-op provides 18 months of work experience, whereas Interns provide at most 9 months.
- Co-ops receive better work assignments with more responsibility than Interns.
- Co-ops have more opportunities to learn people skills than Interns.
- Co-ops can accumulate benefits such as vacation time and retirement benefits that Interns cannot.

What is the co-op schedule? There are two typical co-op schedules. In the first, after attending fall, spring, and summer sessions of the Freshman year on campus, the co-op student completes the first work session in the fall of the sophomore year and then returns to campus for the spring semester. Work and study sessions then alternate until the senior year, which is spent completely on campus. In the second schedule, after attending fall and spring sessions of the Freshman year on campus, the co-op student completes the first work session in the summer and then returns to campus for the fall semester. Work and study sessions then alternate until the senior year. In either schedule, you acquire about eighteen months of work experience during the five-year Co-op Program.

Department handbooks should be referenced for department specific co-op policies as well as typical co-op employers and locations. Also see information on Cooperative Education Program elsewhere in this Bulletin.

## **GENERAL ENGINEERING**

### **Undergraduate**

#### **GEEN 100. Engineering Design and Ethics**

**Credit 2(2-0)**

This course introduces students to engineering and computer science disciplines and functions, professional licensure, the Fundamentals of Engineering exam, code of ethics, safety, the design process, creative thinking, teamwork, and technical writing. A case study on ethics and the application of the design process through a team project are required. (F;S;SS)

#### **GEEN 102. Introduction to Computer Programming**

**Credit 2(0-4)**

This is an introductory course in computer programming. Problem solving techniques and writing algorithms will be stressed. Students will write programs for such tasks as engineering decision-making and numerical computation. (F;S;SS)

#### **GEEN 103. Computers in Engineering**

**Credit 2(1-2)**

Students will use engineering and mathematical computer applications to solve engineering problems. Students will solve numerical problems and learn to use the computer for engineering design. (F;S;SS)

#### **GEEN 110. Colloquium I**

**Credit 0(1-0)**

Contemporary issues, corporate information sessions, campus resources, information literacy, and professional society activities will be discussed. This is the first of two freshman colloquia. (F;S)

#### **GEEN 120. Colloquium II**

**Credit 0(1-0)**

Contemporary issues, corporate information sessions, campus resources, information literacy, and professional society activities will be discussed. This is the second of two freshman colloquia. (F;S)

#### **GEEN 165. Computer Program Design**

**Credit 4(3-2)**

This is a second course in computer programming for students with an interest in computers. Students will learn to write programs in a high level programming language. Prerequisite: GEEN 102 (F;S;SS)

**GEEN 601. Industrial Automation****Credit 3(2-2)**

This course provides study of automation and market competitiveness, sensors and measurements, circuit board designs, materials, handling systems production control, and computer-integrated manufacturing systems. Laboratory experimentation in selected modern manufacturing technologies will also take place. (Senior standing and EE 410 for EE Majors) (**DEMAND**)

**GEEN 602. Advanced Manufacturing Laboratory****Credit 3(0-6)**

Students will work in interdisciplinary teams to design and manufacture products based on the concepts required in GEEN 601-Industrial Automation. (**DEMAND**)

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## **Department of Civil, Architectural, Agricultural, and Environmental Engineering**

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**Peter Rojeski, Jr., Chairperson**

### **DEGREES OFFERED**

Bioenvironmental Engineering – Bachelor of Science

Architectural Engineering – Bachelor of Science

Civil Engineering – Bachelor of Science

Civil Engineering – Master of Science \*

*\* See the Graduate School Bulletin. This degree program includes Architectural Engineering and Bioenvironmental Engineering options.*

### **GENERAL PROGRAM REQUIREMENTS**

Each program in the Department is individually accredited and program requirements are defined by the individual programs.

### **PROGRESSION REQUIREMENTS**

CAAE students are required to pass an FE-style exam at the end of their Freshman, Sophomore, and Junior years. Those who do not pass are strongly encouraged to enroll in the appropriate CAAE Fundamentals Review course that will be offered each summer. The exam will be given again at the end of the review course. Students will not be permitted to enroll in additional CAAE courses until they pass the exam. Senior CAAE students (graduating in May) will be required to sit for the FE exam in the fall, and if they do not pass, again in the spring. Seniors who pass the FE exam will receive an “A” in CAAE 500.

### **Bioenvironmental Engineering Program**

<http://www.ncat.edu/~ageng/>

**Godfrey Gayle, Program Director**

### **MISSION**

The mission of the Bioenvironmental Engineering program is to provide students with a quality education enabling them as professionals to improve the quality of life through sound engineering practices for a sustainable future at local, national, and international levels.

### **EDUCATIONAL OBJECTIVES**

The primary objective of Bioenvironmental Engineering is to provide integrated undergraduate and graduate training in agricultural, biological, and environmental sciences and engineering design. Specific objectives are as follows:

1. Provide students with in-depth training in soil and water engineering supported with knowledge of engineering design, biosystems, and bioenergy topics.
2. Provide training that qualifies students to pursue graduate study and prepares them for success in the private or public sector.
3. Encourage students to participate in continuous professional development, life-long learning, teamwork, and to routinely demonstrate ethical and professional conduct.
4. Assist and guide students as they develop business acumen, analytical, technical, and communication skills, which will aid in attainment of their career goals.

## DEGREES OFFERED

Bioenvironmental Engineering — Bachelor of Science

## PROGRAM REQUIREMENTS

The Bioenvironmental Engineering major must complete 128 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

## ACCREDITATION

The undergraduate program in Bioenvironmental (previously Agricultural and Biosystems) Engineering, leading to the Bachelor of Science in Bioenvironmental Engineering (BSBE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

## CAREER OPPORTUNITIES

A degree in this field prepares a student for careers in engineering design, management, research, consulting, sales, teaching, product development, governmental agencies (federal and state), industries, and foreign services.

## REQUIRED MAJOR COURSES IN BIOENVIRONMENTAL ENGINEERING

AGEN 216	AGEN 600	CAAE 332
AGEN 330	AGEN 624	CAAE 334
AGEN 404	CAAE 100	CAAE 362
AGEN 440	CAAE 101	CAAE 364
AGEN 501	CAAE 102	CAAE 500
AGEN 502	CAAE 204	
AGEN 523	CAAE 331	

## CURRICULUM GUIDE FOR BIOENVIRONMENTAL ENGINEERING

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CAAE 100	2	CAAE 102	2
CAAE 101	2	MATH 132	4
MATH 131	4	ENGL Elective	3
Humanities Elective	3	PHYS 241	3
SOCI Elective	3	PHYS 251	1
ENGL 100	3	CHEM 106	3
GEEN 110	<u>0</u>	CHEM 116	1
	17	GEEN 120	<u>0</u>
			17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CAAE 331	3	CAAE 332	3
MATH 231	4	CAAE 334	2
PHYS 242	3	SOCI Elective	3
PHYS 252	1	MATH 431	3
CHEM 107	3	BIOL/CHEM Elective	4
AGEN 216	<u>2</u>	PHED	<u>1</u>
	16		16



## JUNION YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CAAE 204	3	CAAE 364	3
CAAE 362	3	INEN 260	2
ELEN 440	3	AGEN 330	4
MEEN 441	3	Statistics Elective	3
BIOL/CHEM Elective	3	BIOL Elective	3
PHED	<u>1</u>	CAAE 364	<u>3</u>
	16		18

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AGEN 440	3	AGEN 624	3
AGEN 600	3	AGEN 523	3
AGEN 501	1	AGEN 502	2
AGEN 404	3	AGEN Elective	3
AGEN Elective	3	Humanities Elective	<u>3</u>
Science Elective	3		14
CAAE 500	<u>1</u>		
	17		

Total Credit Hours: 128

## ELECTIVES

**AGEN Electives** – take 6 hours from the following courses:

AGEN 403, AGEN 619, CAAE 215, CIEN 363, CIEN 618, CIEN 664, CIEN 668, EASC 622

**Science Electives** – take 3 hours from the following:

SLSC 338, SLSC 632, EASC 309, ANSC 212, ANSC 411, ANSC 416

**Biology/Chemistry Electives** – take 10 hours from the following:

BIOL 101, BIOL 160, BIOL 220, BIOL 221, BIOL 240, BIOL 370, BIOL 400, BIOL 410, CHEM 221, CHEM 223, LDAR 230

**English Electives** – take 3 hours from the following:

ENGL 101, ENGL 331

**Statistics Electives** –take 3 hours from the following:

ECON 305, INEN 270, MATH 224

## Architectural Engineering Program

<http://www.ncat.edu/~aren>

**Peter Rojeski, Jr., Program Director**

## MISSION

The mission of the BSAE program at North Carolina A&T State University is to provide a nationally recognized professional program in the engineering design of building systems that is committed to excellence in undergraduate and graduate instruction, scholarly and creative research, and service to the local, state, national and international communities.

## EDUCATIONAL OBJECTIVES

1. To provide students with a broad background in architecture, structural systems, building environmental systems, and project management as required for a career in consulting, facility engineering, construction, and other diverse areas of the profession.
2. To develop a core competency that meets or exceeds ABET requirements, prepares students to pass the FE exam, and lays the groundwork for achieving professional registration and life long learning.

3. To promote student and faculty relationships with the professional community through an active involvement with alumni, architectural, engineering, and other allied organizations.
4. To provide faculty and staff with support for training, life long learning, and professional development.
5. To provide the research opportunity, infrastructure, and specialized courses that prepare students to pursue specialized study for careers in structures, building environmental systems, or architecture at the master's level.
6. To attract and retain a highly qualified and diverse student body, by emphasizing recruitment within North Carolina but also attracting students nationally and internationally through advertisement and a higher profile of program and faculty activities.
7. To enhance the students' problem solving, communication, and interpersonal skills to further develop the students' self-confidence and positive self-image.
8. To provide students with a global perspective of architectural engineering and its impact on nations and people around the world.

### **DEGREE OFFERED**

Architectural Engineering – Bachelor of Science

### **PROGRAM REQUIREMENTS**

The Architectural Engineering major must complete 128 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

Included in the 128 semester hours are 6 semester hours of architectural engineering courses selected from one of four optional blocks – Structures, Energy and Building Environmental Systems, Facilities Engineering, and Architectural Design. To be eligible to enroll in advanced architectural design courses, a student must (a) have an accumulated GPA of 2.65 for unconditional enrollment, (2) have completed all prerequisites, and (3) be of senior standing. A student, with a GPA below 2.65, may petition the Departmental Design Committee for permission to enroll in Design III. The petition must be reviewed by the Design Committee and approved by the department before the student will be allowed to enroll in Design III.

### **ACCREDITATION**

The undergraduate program in Architectural Engineering, leading to the Bachelor of Science in Architectural Engineering (BSAE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

### **CAREER OPPORTUNITIES**

Completion of the architectural engineering program provides training for a career in the engineering profession as related to the engineering design and construction of building systems. Training in architectural engineering prepares graduates to pursue a professional career in engineering practice or business. Graduates are also employed in offices of professional engineers engaged in building systems design which include the design of structural, mechanical, lighting, and electrical systems for buildings. In addition, graduates are employed as engineers in the offices of professionals engaged in engineering systems design for architectural projects. Architectural engineering graduates also have opportunities for careers with construction firms and building materials manufacturers where their architectural engineering training is a significant asset.

## DUAL DEGREE IN CIVIL ENGINEERING

Some Architectural Engineering graduates may decide to pursue careers in areas that are traditionally Civil Engineering. Employment with the NC Department of Transportation is one example. For these students, a dual degree in Architectural Engineering and Civil Engineering will enhance their opportunities for career advancement. Since the two curricula are very similar, it is possible for an Architectural Engineering student to earn a second degree in Civil Engineering by completing one additional semester of coursework.

### REQUIRED MAJOR COURSES IN ARCHITECTURAL ENGINEERING PROGRAM

AREN 112	AREN 445	CAAE 102
AREN 221	AREN 447	CAAE 215
AREN 231	AREN 462	CAAE 325
AREN 326	AREN 464	CAAE 331
AREN 361	AREN 483	CAAE 332
AREN 363	AREN 550	CAAE 334
AREN 382	AREN 585	CAAE 340
AREN 415	AREN 586	CAAE 362
AREN 442	CAAE 100	CAAE 500
AREN 444	CAAE 101	CAAE 530

## CURRICULUM GUIDE FOR ARCHITECTURAL ENGINEERING PROGRAM

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CAAE 100	2	CAAE 102	2
CAAE 101	2	MATH 132	4
MATH 131	4	ENGL 101	3
ENGL 100	3	PHYS 241	3
PHED Elective	2	PHYS 251	1
African-American Studies	3	Global Studies	3
GEEN 110	<u>0</u>	GEEN 120	<u>0</u>
	16		16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 231	4	MATH 431	3
CAAE 331	3	CAAE 332	3
PHYS 242	3	CHEM 106	3
PHYS 252	1	CHEM 116	1
AREN 231	3	AREN 221	3
CAAE 215	<u>2</u>	CAAE 334	<u>2</u>
	16	AREN 112	<u>3</u>
			18

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AREN 382	3	AREN 483	3
CAAE 325	3	CAAE 530	3
AREN 326	1	AREN 361	2
AREN 442	2	AREN 363	1
AREN 444	1	AREN 445	2
ELEN 440	3	AREN 447	1
CAAE 362	<u>3</u>	MEEN 441	<u>3</u>
	16	INEN 260	<u>2</u>
			17

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AREN 585	3	AREN 586	3
CAAE 500	1	AREN Option Block	3
AREN 462	2	AREN 550	3
AREN 464	1	Humanities or Soc. Sci. Elective	3
AREN 415	1	MATH 224	<u>3</u>
CAAE 340	3		15
AREN Option Block	<u>3</u>		
	14		
Total Credit Hours: 128			

## ELECTIVES

The Architectural Engineering program has 6 credits of "Option" courses that can be selected from the following listing. It is recommended that students take these two courses in a discipline area.

AREN 630, AREN 632, AREN 633, AREN 635, AREN 639, AREN 642, AREN 645, AREN 654, AREN 662, AREN 670, AREN 672, AREN 675, AREN 682, AREN 683, AREN 684, CAAE 536, CIEN 320

Other electives from the CAAE Department or Construction Management and Safety may be taken upon approval of the faculty advisor and the Department Chair.

### Civil Engineering Program

<http://www.ncat.edu/~civileng/>

**Emmanuel U. Nzewi, Program Director**

## MISSION

The mission of the Bachelor of Science program in Civil Engineering is to provide an educational program attuned to the unique abilities of our students that prepares them to become productive civil engineers contributing to the welfare, quality of life, protection, and advancement of the community.

## EDUCATIONAL OBJECTIVES

To properly fulfill the Mission, the educational objectives of the Bachelor of Science program in Civil Engineering are the following:

1. Our graduates will be ready for their first career assignment as an Engineer Intern, thus being able to work productively in most areas of the civil engineering profession.
2. Our graduates will be adequately prepared and motivated for proper and timely fulfillment of their career goals.
3. Our graduates will have made progress in the development of the knowledge, sensitivity, and skills necessary to function effectively within the social, economical, and political environments of professional engineering practice.

## DEGREES OFFERED

Civil Engineering – Bachelor of Science

Civil Engineering – Master of Science \*

*\*See the Graduate School Bulletin*



## PROGRAM REQUIREMENTS

The Civil Engineering major must complete 128 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

The Civil Engineering program requires students to take design courses in at least four of the following major areas within Civil Engineering:

- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Water Resources Engineering

## ACCREDITATION

The undergraduate program in Civil Engineering, leading to the Bachelor of Science in Civil Engineering (BSCE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

## CAREER OPPORTUNITIES

Civil engineers are employed in the planning, designing, construction and management of transportation, environmental, water resources, geotechnical and structural systems. They may work in private practice, government, and industry. Many civil engineers are licensed as professional engineers in the state in which they practice. Some civil engineers are employed in universities, teaching and research, which usually requires an advanced degree. Civil engineers are in demand in construction, transportation, and government, and Bachelor of Science degree holders in Civil Engineering generally receive excellent starting salaries.

## REQUIRED MAJOR COURSES IN CIVIL ENGINEERING PROGRAM

CAAE 100	CAAE 362	CIEN 321
CAAE 101	CAAE 363	CIEN 330
CAAE 102	CAAE 364	CIEN 335
CAAE 204	CAAE 500	CIEN 350
CAAE 215	CIEN 101	CIEN 400
CAAE 325	CIEN 102	CIEN 403
CAAE 331	CIEN 212	CIEN 404
CAAE 332	CIEN 310	CIEN 510
CAAE 334	CIEN 311	CIEN 520
CAAE 340	CIEN 320	CIEN 550

## CURRICULUM GUIDE FOR CIVIL ENGINEERING PROGRAM

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 131	4	MATH 132	4
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
CAAE 100	2	ENGL 101	3
CAAE 101	2	HIST Elective	3
ENGL 100	3	CAAE 102	2
CIEN 101	1	GEEN 120	0
GEEN 110	0	CIEN 102	1
	16		17

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 231	4	MATH 431	3
PHYS 242	3	Humanities Elective	3
PHYS 252	1	INEN 260	2
CAAE 215	2	CAAE 332	3
CAAE 331	3	CAAE 334	2
CAAE 204	<u>3</u>	EASC 309	3
	16	PHED Elective	<u>1</u>
			17

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CIEN 212	2	CIEN 310	3
CAAE 340	3	CIEN 311	1
CIEN 330	3	MEEN 441/413	3
CIEN 335	1	CAAE 364	3
CAAE 325	3	CIEN 320	3
CAAE 362	3	CIEN 321	1
CAAE 363	<u>1</u>	CIEN 350	<u>3</u>
	16		17

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CIEN 404	2	CIEN 400	3
CIEN 510	3	HIST Elect	3
CAAE 500	1	CIEN Eng Design Elective #2	3
CIEN 520	3	PHED Elective	1
CIEN 550	3	Humanities Elective	3
CIEN Eng Des Elective #1	<u>3</u>	CIEN 403	<u>1</u>
	15		14

Total Credit Hours: 128

## ELECTIVES

**Design Electives Block** (Choose at least one area)

CAAE 530, CAAE 536, CIEN 560

Other approved design electives.

## COURSE DESCRIPTIONS IN CIVIL, ARCHITECTURAL, AGRICULTURAL, AND ENVIRONMENTAL ENGINEERING

### CAAE Common Courses (Undergraduate)

#### **CAAE 100. Fundamentals of Civil, Architectural, and Agricultural Engineering**

**Credit 2(2-0)**

This course gives an overview of the three engineering professions housed within the CAAE department. The topics include careers in these engineering fields, professional registration, application of math to engineering, engineering design process as it applies to each program, units and measuring including both US and metric, written and oral communications, and an introduction to word processing, presentation software, and spreadsheets. (F;S)

#### **CAAE 101. Fundamentals of Civil, Architectural, and Agricultural Engineering Graphics**

**Credit 2(0-4)**

This course is critical to the development of visualization skills, which are important in engineering. Covered by the course are hand drawing skills including drafting, freehand sketching, perspective sketching, and lettering. Visualization skills are developed by stressing freehand techniques. Drafting skills will include plans, elevations, details, scaling, and units (US and

Metric) and will relate to the three professions housed in the department. In addition to orthographic projections, oblique and isometric drawings will be taught. A brief introduction to computer graphics package such as AutoCAD will also be presented. (F;S)

**CAAE 102. Fundamentals of Computer Applications for Civil, Architectural, and Agricultural Engineering**

**Credit 2(0-4)**

This course introduces the student to computer hardware and software and to basic operating systems. Spread sheet programs and other computational packages, such as MathCAD, are introduced and applied to the solution of practical engineering problems. Programming and algorithms are introduced as well as the Visual Basic language. (F;S)

**CAAE 150. Freshman Fundamentals Review Seminar**

**Credit 1(0-2)**

This course will provide a review of the Math and Science concepts covered on the CAAE Freshman Competency Exam. The course will culminate in re-examination using the CAAE Freshman Competency Exam. The course is pass/fail. Prerequisite: Consent of department chairperson. (SS)

**CAAE 204. Surveying and Site Analysis**

**Credit 3(2-3)**

This course covers the theory and practice of plane surveying, route surveying, boundary surveying, topographic surveying, and site planning and design. Topics include elements of plane surveying including taping, use of level, theodolite, and total station; route surveying, roadway planning and layout, horizontal and vertical curves; drainage, earthwork calculations; topographical surveying and mapping; error adjustment; site development including site location, geometry, conditions, design, layout, and regulatory requirements; and introduction to Geographic Information Systems and Global Positioning Systems. Prerequisite: MATH 102 or consent of instructor. (F;S)

**CAAE 215. Computer Aided Design**

**Credit 2(0-4)**

This course provides an introduction to a computer based design/drawing application such as AutoCAD. The student will learn how to use computers to develop 2D presentation drawings. Prerequisites: CAAE 102 and CAAE major or consent of the instructor. (F;SS)

**CAAE 250. Sophomore Fundamentals Review Seminar**

**Credit 1(0-2)**

This course will provide a review of the math, science, and engineering science concepts covered on the CAAE Sophomore Competency exam. The course will culminate in re-examination using the CAAE Sophomore Competency Exam. The course is pass/fail. Prerequisite: Consent of department chairperson. (SS)

**CAAE 325. Structural Analysis**

**Credit 3(3-0)**

This course introduces the concepts of structural analysis for determinate and indeterminate structural systems using both hand calculations and computer applications. Prerequisite: CAAE 332. (F;S)

**CAAE 331. Mechanics I- Statics**

**Credit 3(2-2)**

This course introduces the theory and application of engineering mechanics as it relates to statically determinant systems. Topics include basic forces, free body diagrams, vectors, resultants, equilibrium, pulley systems, rigid bodies, truss analysis, frame, pulleys, machines, internal forces in structural members, friction, center of gravity and centroids, moment of inertia, and composite bodies and areas. Prerequisites: MATH 131 and PHYS 241. (F;S)

**CAAE 332. Engineering Solid Mechanics I**

**Credit 3(3-0)**

This course covers stress and strain, axial and torsional loadings, bending moment and shear distributions from transverse loads, combined stress analysis, deformation and deflection of shafts and beams, transformation of stress and strain, column buckling, and an introduction of the analysis of statically determinate beams. Prerequisites: CAAE 331 and MATH 132. (F;S)



**CAAE 334. Engineering Mechanics II****Credit 2(1-2)**

This course covers the basic principles of classical mechanics applied to the motion of particles, systems of particles, and rigid bodies; kinematics; rectilinear and curvilinear motions; kinetics: force, mass, and acceleration; energy and momentum principles. Topics include coordinate systems, work-energy, impulse-momentum, and selected topics from three-dimensional rigid bodies. Prerequisites: MATH 132, PHYS 242 and CAAE 331. (S;F)

**CAAE 340. Numerical Methods in Civil, Architectural, and Agricultural Engineering****Credit 3(2-2)**

This course will expose the student to the use of existing applications for the numerical solution of engineering problems. The recitation session will also allow the students to program these methodologies for some specific engineering problems. Linear algebra, matrix theory, vectors interpolation and integration methods, MATH CAD (or a similar math workbench), and spreadsheet applications will be emphasized. Optimization Theory will be introduced. The purpose of this course is to ensure proficiency in the application of math techniques in the solution of engineering problems commonly encountered by civil, architectural, and agricultural engineers. Prerequisites: MATH 231. Corequisite: MATH 431. (F)

**CAAE 350. Junior Fundamentals Review Seminar****Credit 1(0-2)**

This course will provide a review of the math, science, and engineering science concepts covered on the CAAE Junior Competency Exam. The course will culminate in re-examination using the CAAE Junior Competency Exam. The course is pass/fail. Prerequisites: Consent of department chairperson. (SS)

**CAAE 362. Engineering Fluid Mechanics and Hydraulics****Credit 3(3-0)**

This the first level engineering fluid mechanics course which also integrates fundamental hydraulics concepts and applications pertinent to Civil, Architectural, and Agricultural Engineering. Topics include properties of fluids, hydrostatic pressure and manometry, forces on submerged surfaces, Pascal's Law, Archimedes' Principle, the Bernoulli and energy equation for steady state flow, Reynolds transport theorem, energy and hydraulic grade lines, head loss calculations, momentum principle, flow and velocity measurement, pumps, branched and looped pipe systems and analysis of open channel flow, sub and super-critical flow, hydraulic jump, and dimension analysis. Prerequisites: CAAE 331 and MATH 231. (F;S)

**CAAE 363. Engineering Fluid Mechanics and Hydraulics Laboratory****Credit 1(0-2)**

This course includes a set of laboratory exercises designed to reinforce and demonstrate engineering fluid mechanics and hydraulics concepts. Topics include graphical analyses of experimental data, fluid properties, manometry, and hydrostatic forces on surfaces. Bernoulli and energy equations demonstrations, impact of a jet, orifice flow and coefficients of contraction, velocity and discharge, pipe friction, broad and sharp-crested weirs, water surface profiles, Hydraulic jump, and flow through sills and throats. Prerequisite: CAAE 362 or consent of instructor. (F;S)

**CAAE 364. Engineering Hydrology****Credit 3(3-0)**

This is a study of hydrologic cycle with emphasis on the application of surface and subsurface hydrology in water systems. Topics include hydrologic cycle and hydrologic abstractions, Rain-fall-runoff relationships, characterization of watersheds, unit hydrograph analysis, stream flow measurement, flood routing, storm water management and design of detention systems, and frequency analysis of hydrologic data. Prerequisite: Junior standing.

**CAAE 500. General Engineering Topics Review****Credit 1(0-3)**

The course covers and reviews the engineering topics included in the General Engineering Sections of the Fundamentals of Engineering (FE) exam. The course emphasizes extensive problem solving and helps students prepare for the FE exam. Prerequisite/Corequisite: Senior



Standing in architectural engineering, civil engineering, or agricultural engineering. (F;S;SS on DEMAND)

**CAAE 530. Structural Design in Steel** **Credit 3(3-0)**

This course will introduce the students to the preliminary design of structural systems and element design in structural steel. The students will be taught to define structural system layouts, structural loads and design simply supported steel joists, beams, and columns. Prerequisite: CAAE 332. Corequisite: CAAE 325. (F;S)

**CAAE 536. Reinforced Concrete** **Credit 3(3-0)**

This course is a continuation of AREN 430 emphasizing the concepts of reinforced concrete theory. The design of doubly reinforced beams, continuous beams, and beam-column behavior of concrete columns is addressed. Such topics as beam deflections, reinforcing bar bond stresses, and development lengths are also presented. Prerequisites: CAAE 530 and senior standing or consent of instructor. (F;S)

**Agricultural And Biosystems Engineering (Undergraduate)**

**AGEN 114. Home and Farm Maintenance** **Credit 3(1-4)**

This course provides instruction in the selection, sharpening, care, and correct use of shop tools and equipment, woodworking and simple carpentry, simple electrical repairs, sheet metal work, electric arc and oxyacetylene welding, pipe fitting, and simple plumbing repairs. (F)

**AGEN 116. Geographic Information System in Engineering and Natural Resources** **Credit 2 (0-4)**

This course will introduce the student to a Geographic Information System (GIS) for database analysis using ARC/INFO software. Management and techniques for data input, storage, retrieval, analysis and display of spatial and tabular data would be covered in a computerized laboratory setting. Global Positioning Systems (GPS) will also be introduced. (F)

**AGEN 204. Surveying, Practices, and Principles** **Credit 3(2-2)**

This course is an introduction to plane surveying. Topics include use of surveying instruments, theory of measurements and sources of error, traverse and curve computations, stadia measurements, differential and profile leveling, topographic mapping, and design projects. (S)

**AGEN 330. Engineering Design and Systems Analysis** **Credit 4(2-4)**

System-based thinking will be used to improve the students' integrative view in engineering designs. This concept will be used in designing physical models for real world application. Subject matter discussions will include soft and hard systems, learning styles, relevant systems, design techniques, optimum designs and evaluation. Prerequisite: CAAE 332. (S)

**AGEN 403. Power and Machinery** **Credit 3(2-2)**

This course deals with tractive units that include field machinery and tractor power. The first part involves the design principles of field machinery, evaluating the functional performance, and the efficiency of these machines. The second part deals with the thermal analysis of internal combustion engines. Students will learn to measure and calculate tractive and engine powers. Prerequisites: CAAE 332 and 334. (F)

**AGEN 404. Structures and Environment** **Credit 3(1-4)**

This course deals with the fundamentals of building construction applied to location, selection materials, foundations, planning farm structures, and environmental considerations, such as temperature, humidity, condensation, and ventilation. Prerequisite: CAAE 332. (F)

**AGEN 440. Engineering Properties of Biological Materials** **Credit 3(2-2)**

Engineering properties of plant and animal materials will be studied. Specific topics will include structure and composition of plant and animal materials, elastic and viscoelastic properties, food rheology and thermal properties, aerodynamic and hydrodynamic properties, and

electromagnetic properties. These properties will be used to design sound biological and environmental systems. Prerequisites: BIOL 220 or 221 and CAAE 332 or consent of instructor. (F)

### **AGEN 501. Engineering Design I**

**Credit 1(1-0)**

The major objective of this course is to enhance the design capability of agricultural and biosystems engineering students. During this course, each student will identify a design project, define the problem, collect all required resources and databases and outline the work plan. This project should integrate design concepts from previous courses. Prerequisite: Senior standing. (F)

### **AGEN 502. Engineering Design II**

**Credit 2(2-0)**

The major objective of this course is to enhance the design capabilities of agricultural engineering students. This is a continuation of AGEN 501. During this course, students will complete the design project selected in AGEN 501. (S)

### **AGEN 522. Dairy/Food Engineering**

**Credit 3(2-2)**

The general engineering principles of solids, fluids, and process equipment will be discussed. Topics include energy, heat, enthalpy, psychometrics, heat and mass transfer, drying and refrigeration of food products. Prerequisite: MEEN 441 or consent of the instructor. (F)

### **AGEN 523. Biological and Agricultural Energy Systems**

**Credit 3(2-2)**

This course discusses the production utilization and system design for energy in food and agricultural productions. Specific topics include: biogas, biomass, solar energy, energy analysis, conservation and management, and electric power supply and motor control. Energy production through photosynthesis and energy flow in biological systems will also be studied. Prerequisite: MEEN 441. (S)

### **AGEN 525. Farm Shop Organization and Management**

**Credit 3(1-4)**

This is a course designed for prospective and in-service teachers of vocational agriculture; it includes presentation of purpose, plans and equipment of shops, organization of course of study and methods of teaching. Prerequisites: AGEN 114 and AGED 501. (S)

### **AGEN 600. Soil and Water Engineering I**

**Credit 3(2-2)**

This course is the study of the improvement of soil and water use by evaluating and using present conservation practices and models. Water conveying and retaining structures, and soil conservation, drainage and irrigation systems will be discussed and designed. The course will emphasize sound environmental design practices. Prerequisite: CAAE 364 or consent of the instructor. (F)

### **AGEN 619. Instrumentation and Measurement**

**Credit 3(2-2)**

This course will emphasize quantitative evaluation of some of the well established parameters such as temperature, humidity, fluid flow, pressure, displacement, velocity, acceleration, force, stress, strain, etc. that are widely used in agricultural and biosystems engineering and other engineering disciplines. Prerequisite: CAAE 332, MEEN 336, or consent of instructor. (DEMAND)

### **AGEN 624. Water Resources Engineering**

**Credit 3(2-2)**

This course emphasizes the analysis and design of water resources systems. Topics include water resources planning and development, hydraulic structures, introduction to aquifer analysis and contamination, well development, pump evaluation and selection, water quality and management, water laws detention and retention pond, wastewater management, and remediation. Prerequisite: CAAE 364 or consent of the instructor. (S)

## **Architectural Engineering (Undergraduate)**

- AREN 112. History of American Architecture** **Credit 3(3-0)**  
This course is an illustrated lecture course. It provides an analytical study of the major architectural and engineering developments that have shaped the American-built environment from the arrival of the Europeans to the present. (F)
- AREN 221. Building Sanitation and Fire Protection** **Credit 3(3-0)**  
This course is the study of the following: waste water, water supply and distribution; plumbing systems and fixtures; soil, water and venting systems; pipe sizing fire protection systems for buildings and pumps, sprinklers, gravity and pressure vessels, and controls. Lecture-problems course. (S)
- AREN 231. Materials and Methods of Construction** **Credit 3(3-0)**  
This course will introduce the student to the use of construction materials in buildings. An evaluation of both the function and form of the major building systems such as walls, floors and roofs will be presented. (F)
- AREN 326. Structural Engineering Laboratory** **Credit 1(0-2)**  
This laboratory course will introduce the student to laboratory methods in experimental structural analysis and tests to reinforce structural behavior. Prerequisites: CAEE 332. Corequisite: CAEE 325. (F;S)
- AREN 361. Heating, Ventilation, and Air Conditioning Principles** **Credit 2 (2-0)**  
This course is the study of the basic concepts of energy and building systems design. The course covers the subjects of psychrometrics and human comfort in buildings. The topics include heat transfer functions, heating loads, cooling loads, and the refrigeration cycle. Prerequisites: MATH 131 and PHYS 242. Corequisite: AREN 363. (S)
- AREN 363. HVAC Principles Laboratory** **Credit 1(0-2)**  
This laboratory provides hands on experiences that supplement the topics presented in AREN 361. Co-requisite: AREN 361. (S;F)
- AREN 382. Architectural Design I** **Credit 3(0-6)**  
The student is introduced to the basic fundamentals of design, which includes space relationships, form, and visible structure. The course includes perspective drawing, plans, elevations, sections, shades, and shadows. Prerequisites: AREN 231, AREN 221, MATH 132, MEEN 335, and junior standing. (F)
- AREN 415. Advanced CAD Applications for Architectural Engineers** **Credit 1(0-2)**  
This course provides an application of advanced CAD applications to the Architectural Engineering profession. Topics include 2D projections and rotations into 3D space; development of 3D presentation drawings and 3D modeling. Prerequisites: CAEE 215, AREN majors or consent of the instructor.
- AREN 442. Fundamentals of Illuminating Engineering** **Credit2 (2-0)**  
A study of the basic principles of illumination, lighting concepts, analysis, design, and the application of these principles to luminous environments. Topics include physics of light, vision, and visibility, units and terminology, light sources, numerical methods, and the application of these principles to lighting design. Prerequisites: PHYS 242, AREN major or consent of the instructor. Corequisite: AREN 444 (F)
- AREN 444. Illuminating Engineering Laboratory** **Credit 1(0-2)**  
This laboratory provides hands on experiences that supplement the topics presented in AREN 442. Co-requisite: AREN 442. (F;S)



**AREN 445. Electrical Systems for Buildings****Credit 2 (2-0)**

This course includes the analysis and design of electrical systems utilizing the National Electrical Code. The topics include basic circuits, ac and dc single phase, three-phase power, transients, capacitance and inductance, branch circuits, panelboards, motors, and electrical distribution in buildings. The course also covers design topics of system sizing, overcurrent protection, and voltage drop as they apply to electrical systems design for a building. Prerequisites: MATH 132 and PHYS 242, AREN major or consent of the instructor. Corequisite: AREN 447 (S)

**AREN 447. Electrical Systems for Buildings Laboratory****Credit 1(0-2)**

This laboratory provides hands on experiences that supplement the topics presented in AREN 445. Co-requisite: AREN 445. (S;F)

**AREN 462. Heating, Ventilation, and Air Conditioning Systems****Credit 2 (2-0)**

This course includes heating, ventilating, and central air conditioning system components, all air and water systems, and packaged systems. It covers the introduction to air-side and water-side system design concepts, space air diffusion, and energy recovery systems. Prerequisites: AREN 361, AREN major or consent of the instructor. Corequisite: AREN 464. (F)

**AREN 464. HVAC Systems Laboratory****Credit 1(0-2)**

This laboratory provides hands on experiences that supplement the topics presented in AREN 462. Co-requisite: AREN 462. (F;S)

**AREN 483. Architectural Design II****Credit 3(0-6)**

This course presents a series of problems in space organization and planning. Presentation composition and the integration of structures in the design process are studied. Prerequisite: AREN 382 or junior standing. (S)

**AREN 550. Engineering Project Management****Credit 3(3-0)**

This course is an introduction to engineering project management, with particular emphasis placed on the planning and control of the engineering design of buildings. Topics covered include estimating, contracts, planning, resource leveling, and project control. Manual and automated methods will be addressed. Prerequisites: AREN 231, senior standing or consent or instructor. (S;F)

**AREN 585. Senior Project I- Design Development****Credit 3(0-6)**

This course teaches students how to prepare the preliminary and design development documents for a building project. The materials covered include engineering calculations, preliminary and design development drawings, and preliminary cost estimate. Computer programs are used to assist the students with program development, floor plan development, site plan development, and the conceptual cost estimate. Prerequisites: Senior standing, AREN 221, AREN 361, AREN 382, CAAE 530, AREN 442, and AREN 445 or consent of chairperson. Corequisite: AREN 462. (F)

**AREN 586. Senior Project II - Construction Documents****Credit 3(0-6)**

This course teaches the student how to prepare a final set of discipline specific construction documents, including engineering calculations production drawings, and specifications. The student will discuss contracts, ethics, and construction administration as they relate to the project. Prerequisite: Senior standing, AREN 221, AREN 361, AREN 382, CAAE 530, AREN 442, AREN 445 or consent of chairperson. (S)

**AREN 630. Advanced Structural Analysis****Credit 3(3-0)**

This course emphasizes the more complex concepts of structural analysis for determinate and indeterminate structural systems using both hand calculations and computer software. Prerequisites: CAAE 325 and AREN 326 or consent of the instructor. (S)



**AREN 632. Structural Systems****Credit 3(3-0)**

This course will discuss building structural systems, their form and function. Preliminary design techniques will be presented and system evaluation techniques discussed. Issues such as loading types and magnitudes, formwork, construction loads and speed of construction will be addressed. Torsional analysis techniques and the concepts of flexible and rigid diaphragms will be presented. The portal and cantilever methods of approximate structural analysis will be presented. Computer aided structural analysis and design will be introduced. Prerequisites: Senior standing and AREN 430 or consent of instructor. (DEMAND)

**AREN 633. Foundations and Soil Structures****Credit 3(2-3)**

The student will study the origin and composition of soil structure. The course includes the flow of water through soils, capillary, and osmotic phenomena. Soil behavior under stress is studied along with compressibility, and shear strength. The elements of the mechanics of soil masses are studied with application to problems of bearing capacity of foundations, earth pressure on retaining walls, and stability of slopes. Prerequisite: CAAE 530 or consent of instructor. (DEMAND)

**AREN 635. Steel Structures I****Credit 3(3-0)**

This course is a continuation of AREN-430 emphasizing the concepts of steel structural member behavior. The design of tension members, beam-columns, members in torsion, connections and base plates are presented. The design of composite members is introduced. Prerequisites: Senior standing and CAAE 530 or consent of instructor.(F)

**AREN 639. Masonry Design****Credit 3(3-0)**

Concepts of reinforced masonry design are addressed. The properties of masonry materials will be reviewed and the procedures for the design of typical masonry components will be presented. Prerequisite: Senior Standing and AREN 430 or Consent of Instructor. (DEMAND)

**AREN 642. Lighting Applications I****Credit 3(2-2)**

This course applies the principles of lighting design to the engineering of lighting systems. It also develops methodology for solving problems in both interior and exterior lighting. Prerequisite: AREN 442 or consent of instructor. (S)

**AREN 645. Electrical Systems for Buildings II****Credit 3(2-2)**

This course is a continuation of AREN-345. It covers the design of safe and reliable electrical distribution systems for commercial and industrial buildings. The topics included are circuit protection, feeder and branch circuit design, and fault analysis. Prerequisite: AREN 442, AREN 445, or consent of instructor. (F)

**AREN 650. Design, Operations, and Maintenance of Buildings I****Credit 3(3-0)**

This course covers the fundamental knowledge related to structural, mechanical, and space enclosing building systems. The efficient operation and cost-effective maintenance of these building systems are investigated and evaluated to determine their impact on the management of a facility. This course introduces the facility engineer to the construction process, the structural systems, building envelope, interior enclosures, HVAC systems, fluid distribution, and other environmental systems that affect the efficient operation of a facility. Prerequisite: Not open to BSAE students. (DEMAND)

**AREN 652. Design, Operations, and Maintenance of Buildings II****Credit 3(3-0)**

This course covers the fundamental knowledge related to lighting/electrical, people movement in a facility, energy utilization and control, environmental safety, and security. The efficient operation and cost-effective maintenance of these building systems are investigated and evaluated to determine their impact on the management of a facility. This course introduces the facility engineer to the construction process, lighting and electrical systems, vertical transportation, energy management, building environmental safety, exterior building environment, fire

protection, and building security. Prerequisite: AREN 650. Not open to BSAE students. **(DEMAND)**

**AREN 654. Facilities Management**

**Credit 3(3-0)**

This course deals with long range and master planning for facilities, including space forecasting, project management, and post occupancy evaluation. Prerequisites: Senior standing and AREN 430. Corequisites: AREN 585, AREN 586, or consent of instructor. **(DEMAND)**

**AREN 657. Food Services Facilities Engineering**

**Credit 3(3-0)**

This course presents an overview of restaurant design including the layout of the kitchen and kitchen equipment, the dining room, and ancillary areas. The major design emphasis is on energy efficient design of the HVAC system and the lighting. Prerequisites: AREN 442, AREN 462, and senior standing or consent of the instructor. Co requisites: AREN 642 or AREN 662 **(DEMAND)**

**AREN 662. HVAC Systems Design**

**Credit 3(3-0)**

This course addresses the design methodology, sizing, and selection techniques of pumps, fans, heat-exchanges, and air washers, cooling towers, and terminal units. Duct and pipe design methods are covered. Primary and secondary hydronic systems are covered, including system air-control techniques. Design projects are required. Prerequisite: Senior standing and AREN 462 or consent of instructor. **(F)**

**AREN 670. Energy and the Environment**

**Credit 3(3-0)**

The course includes readings and discussions about energy, its origins, supply, transportation, and use. The effect of fossil fuels on the environment and environmental protection regulations are discussed. Renewable energy and the impact of energy costs on economic growth are investigated. Prerequisite: Senior standing or consent of instructor. **(F)**

**AREN 672. Energy Conservation in Buildings**

**Credit 3(3-0)**

The energy use patterns in schools and hospitals are studied in terms of the relevant IES and ASHRAE Standards. The course presents various utility rate structures and energy auditing techniques along with the effect of operation and maintenance on the building energy use. Various retrofit options and computerized energy management systems are investigated culminating in design projects. Prerequisite: Senior standing, AREN 361, AREN 442, and AREN 445 or consent of instructor. **(F)**

**AREN 675. Energy Management for Buildings**

**Credit 3(3-0)**

This course involves the study of renewable and nonrenewable energy sources for buildings, energy estimating methods (manual and automated) optimizing building envelop design and comparative energy requirements for various HVAC systems. The student utilizes the solar energy F-chart method and design of efficient lighting and electrical systems to solve design problems. Topics include Energy Management and Control Systems (EMCS) waste heat recovery, energy audit procedures for existing buildings, life cycle cost, and techniques. Prerequisite: Senior standing or consent of instructor. **(DEMAND)**

**AREN 682. Architectural Design III**

**Credit 3(0-6)**

This course presents a series of problems for study of space analysis, space organization, form, and function. The student learns how to integrate the architectural and the structural components. The course introduces the student to computer-aided drafting and design. Prerequisites: AREN 483, MEEN 336, senior standing, and Design Option approval. Corequisite: AREN 326. **(F)**

**AREN 683. Architectural Design IV**

**Credit 3(0-6)**

This course presents an advanced series of problems for study of space analysis, space organization, form, and function. The student applies the integration of design, construction methods,

and methods of the organization of structural components to a design project. Prerequisite: AREN 682. (S)

**AREN 684. City Planning and Urban Design** **Credit 3(1-4)**

This course looks at the history of city planning and urban design, general problems of city planning, and urban design-architectural space composition. The student studies regional and urban planning while investigating the scale of the plan for region and city presentations. The student looks at the relationships between the location of residential areas, industry, business, and commerce. The design of the neighborhood unit is implemented. Prerequisite: Juniors enrolled in the program of the Transportation Institute and Architectural Engineering majors of Senior standing. Open to practicing design professionals. (S)

**AREN 685. Selected Topics** **Credit VAR 1-3(max. Total 6)**

This course allows a student to select an engineering topic of interest to investigate in depth. The topic will be selected by the student and the student, will select a faculty advisor before the beginning of the semester. The topic must be pertinent to the program the student is enrolled in and approved by the faculty advisor. Prerequisite: Consent of instructor. (F;S;SS)

**AREN 686. Special Projects** **Credit VAR 1-3(max.Total 6)**

The student must select a project on a special engineering topic of interest to the student and a faculty member who will act as advisor. The project and scope of work must be agreed on by the student and the faculty advisor before the beginning of the semester. The project may be analytical and/or experimental and encourage independent thinking. The topic must be pertinent to the program the student is enrolled in and approved by the faculty advisor. Prerequisite: Consent of instructor. (F;S;SS)

**AREN 687. Directed Readings** **Credit 3(max. Total 6)**

The student will select reading materials on an engineering topic of interest to the student and a faculty member who will act as the advisor. The student must develop goals and objectives for the course and submit a reading list and a plan for meeting the goals and objectives to the faculty member for approval prior to enrolling in the course. The student will work independently to complete the plan, and the faculty advisor will act as the student's advisor for the course. Prerequisite: Consent of instructor. (DEMAND)

**Civil Engineering (Undergraduate)**

**CIEN 101. Introduction to Civil Engineering & Problem Solving** **Credit 1(0-2)**

This course provides the student with some exposure to civil and environmental engineering problems. Lectures from faculty and professional engineers are components of this course as well as teaming, presentation techniques. This course will provide help in engineering applications of Calculus I and Chemistry. Prerequisite: Freshman standing. (F,S)

**CIEN 102. Professional Issues & Problems in Civil Engineering** **Credit 1(0-2)**

This course provides the student with exposure to civil and environmental engineering issues and problems. This is accomplished with lectures from faculty and professional engineers and other practicing civil engineers. This course will provide help in engineering applications of Calculus II, and/or Physics I and Chemistry. Prerequisite: Freshman standing. (F,S)

**CIEN 212. Fundamental Principles in Environmental Engineering** **Credit 3(3-0)**

This course is an introduction of biological, chemical, and physical principles that are foundational in environmental engineering. Topics include mass balance, biological and microbiological processes, solution precipitation reactions, Henry's law, chemical kinetics, diffusion, and mass transfer. Prerequisites: CHEM 106, MATH 131, and 132. Corequisite: MATH 431. (F;S)



**CIEN 310. Environmental Engineering****Credit 3(3-0)**

This course provides an introduction to environmental pollution. Topics include physical, chemical and biological water quality parameters, water purification processes in natural systems, air pollution and solid waste management, and general design of waste control systems. Prerequisite: Junior standing. (S;F)

**CIEN 311. Environmental Engineering Laboratory****Credit 1(0-3)**

This course provides selected experiments on the measurement of environmental pollutants. Topics include use of microscope, Gram stain, conform analysis, pH, alkalinity, hardness, DO, BOD, and control of microorganisms. Co requisite: CIEN 310. (F)

**CIEN 320. Geotechnical Engineering****Credit 3(3-0)**

This course will introduce the following topics: engineering mechanics and properties of soils, stresses and settlements in soils, earth pressures on structures, stability of slopes and embankments, and fundamentals of foundation selection and design. Prerequisites: CAAE 362 and 363. (S)

**CIEN 321. Geotechnical Engineering Laboratory****Credit 1(0-3)**

This course will provide laboratory experiences in soil identification, classification, permeability, consolidation, indexing, and laboratory evaluation of shear and bearing strength of soils. Prerequisites: CAAE 362 and 363. Corequisite: CIEN 320. (S)

**CIEN 330. Construction Materials****Credit 3(3-0)**

The course covers the manufacture and properties of mineral and bituminous cements and mineral aggregates. It explores the mechanical and chemical properties of Portland cement concrete, bituminous concrete, masonry units, and timber products. Prerequisites: CIEN 204 and MEEN 336. (F)

**CIEN 335. Construction Materials Laboratory****Credit 1(0-2)**

This course offers an introduction to testing techniques for construction materials including concrete, masonry, wood, and bitumen. Prerequisite: CAAE 332. Corequisites: CIEN 330 (F)

**CIEN 350. Transportation Engineering****Credit 3(3-0)**

This course focuses on one mode of transportation, highway engineering. The major aspects of highway engineering covered are administration and finance, traffic engineering, traffic operations and safety, geometric design, highway materials, structural design, and highway planning and economics. Co requisite: CAAE 204. (S)

**CIEN 400. Civil Engineering Systems Design****Credit 3(2-2)**

This course emphasizes a team solution of a practical and comprehensive civil engineering design project. Real world parameters including local codes, ordinances and pertinent engineering practices are emphasized. Professional-level team presentation of civil engineering design projects using modern tools is required. Prerequisites: Senior standing in Civil Engineering and at least (1) of: CIEN 510, CIEN 520, CIEN 522, CIEN 550, CIEN 560, CAAE 530, CAAE 536. (F,S)

**CIEN 403. Senior Seminar****Credit 1(0-2)**

This course is used to prepare the student for the Senior Exam, which is given as the final exam for the course. Included also are discussions on ethics and professionalism. Each student prepares and presents to the class an original paper on a topic of engineering importance. Prerequisite: Senior standing. (F)



**CIEN 404. Applications of Statistics, Reliability and Decision Theory in Civil Engineering**

**Credit 2(2-0)**

This course will introduce the students to probability theory and statistics. Reliability theory and Decision analyses are introduced. The course will incorporate simplified examples of applications of decision analysis, modeling of system response, and system reliability in the different areas of the civil engineering curriculum. The use of common statistical tools in the selection of design parameters will be presented. Prerequisites: Senior standing. (S)

**CIEN 416. Solid Waste Management**

**Credit 3(3-0)**

This course is the study of the collection, storage, transport and disposal of solid wastes. Examination of various engineering alternatives with appropriate consideration for air and water pollution control and land reclamation will take place. Prerequisite: Senior standing. (DEMAND)

**CIEN 460. Water Resources Engineering**

**Credit 3(3-0)**

This course is the study of the application of hydrologic and hydraulic principles in the analysis and design of water resources systems. Topics include hydraulic structures, system economics, water law, irrigation, hydroelectric power, navigation, flood control, and water resources planning. Prerequisite: CIEN 360. (DEMAND)

**CIEN 480. Construction Engineering**

**Credit 3(3-0)**

This course is an introduction to construction engineering emphasizing heavy and highway construction; organization of construction industry; construction equipment, methods, and management; safety and environmental health in construction; and project planning and scheduling. Prerequisite: Senior standing. (DEMAND)

**CIEN 482. Construction Project**

**Credit 3(1-4)**

This course provides an integrated approach by student teams to designing, estimating, planning, scheduling and management of construction projects. Prerequisite: CIEN 480. (DEMAND)

**CIEN 510. Environmental Engineering Design**

**Credit 3(3-0)**

This course defines the analysis and design of water and wastewater treatment systems. Topics included in the course are analysis and functional design of physical, chemical and biological treatment processes, pump stations, and sludge treatment processes. CIEN 310. (S)

**CIEN 520. Geotechnical Engineering II**

**Credit 3(3-0)**

This course is a continuation of CIEN 320 with emphasis on the behavior and design of retaining walls and shallow and deep foundations. Also, it will introduce the following topics: earth pressure, bearing capacity, settlement, behavior and design of anchored bulkheads, excavation bracing and buried structures, and response of deep foundations to vertical and horizontal loads. Prerequisites: CIEN 320 and 321. (F)

**CIEN 522. Foundation Design**

**Credit 3(3-0)**

This course emphasizes the design of foundations for structural systems using geotechnical analysis and subsurface explorations. Designs considered include shallow and deep foundations, retaining structures, earth slope stability systems, and soil and site improvements. Prerequisite: CIEN 320. (DEMAND)

**CIEN 540. Structural Engineering Design**

**Credit 3(3-0)**

This course will introduce the student to the design of reinforced concrete, steel, and timber structures. Consideration will be given to simple structural systems as designed for each material. Prerequisite: CIEN 340. (S)

**CIEN 550. Transportation Design**

**Credit 3(3-0)**

This course introduces students to the transportation design process through a series of comprehensive transportation design projects. Emphasis is placed on the utilization of existing facilities and creation of efficient new facilities through transportation systems management

techniques. Energy, environment, mobility and community impacts are considered as measures of effectiveness in the design process. Prerequisite: CIEN 350. (F)

### **CIEN 560. Water Resources Engineering Design**

**Credit 3(2-2)**

This course involves the application of hydrologic and hydraulic principles in the analysis and design of water resources systems. The measurement of ground water parameters and general water quality parameters is covered. Topics covered include, water supply and distribution, reservoirs, water law, hydroelectric power, flood control, water resources planning and development, and storm water drainage. The use of HEC-2 software for flood plain modeling is introduced. Prerequisites: CAAE 360, CAAE 362, and CAAE 363. (F)

### **CIEN 570. Construction Design**

**Credit 3(3-0)**

This course covers construction engineering design applications in the construction of buildings, highways, and other civil and industrial facilities. Emphasized materials include Portland cement concrete mix design and asphalt cement mix design. Construction problem solutions include crane selection, positioning, and loading; scheduling of construction materials and personnel; and computer aided design and construction management. Prerequisites: CIEN 330, CIEN 335, CAAE 325, and CIEN 341. Corequisites: CIEN 320 and 321. (DEMAND)

### **CIEN 600. Expert Systems Applications in Civil Engineering**

**Credit 3(3-0)**

This course provides an introductory overview of artificial intelligence with an emphasis on Civil Engineering applications, what they are, how they are applied today, when they should and should not be used, and what goes into building them. Emphasis is on task selection criteria, knowledge acquisition and modeling, expert system architectures (control and representation issues), and testing and validation. Course requirements will include the design and development of a working system in a chosen application area. Prerequisite: Senior or graduate standing. (DEMAND)

### **CIEN 610. Water and Wastewater Analysis**

**Credit 3(2-3)**

This course is the study of laboratory and field methods for the measurement and analysis of water. Prerequisite: CIEN 410. (DEMAND)

### **CIEN 614. Stream Water Quality Modeling**

**Credit 3(3-0)**

This course includes mathematical modeling of water quality in receiving streams. Topics include the generation of point and nonpoint sources of pollutants, modeling and prediction of the reaction, transport and fate of pollutants in the stream, and the formulation and solution of simulation models. Prerequisite: CIEN 410. (DEMAND)

### **CIEN 616. Solid Waste Management**

**Credit 3(3-0)**

This course emphasizes the study of the collection, storage, transport and disposal of solid wastes. Examination of various engineering alternatives with appropriate consideration for air and water pollution control and land reclamation are considered. Prerequisite: Senior or graduate standing. (DEMAND)

### **CIEN 618. Air Pollution Control**

**Credit 3(3-0)**

This course provides an introduction to air pollution and its control. Topics include sources, types, and characteristics of air pollutants, air quality standards, and engineering alternatives for achieving various degrees of air pollution control. Prerequisite: Senior standing. (DEMAND)

### **CIEN 620. Foundation Design I**

**Credit 3(3-0)**

This course will introduce the following topics: behavior and design of retaining walls and shallow foundations, earth pressure, bearing capacity and settlement, stress distribution and consolidation theories, and settlement of shallow foundations. Prerequisite: CIEN 520. (DEMAND)

**CIEN 622. Soil Behavior****Credit 3(3-0)**

This course will introduce the following topics: behavior of soil examined from a fundamental perspective, review of methods of testing to define response, and rationale for choosing shear strength and deformation parameters for soils for design applications. Prerequisite: CIEN 320 or graduate standing. **(DEMAND)**

**CIEN 624. Seepage and Earth Structures****Credit 3(3-0)**

This course will introduce the following topics: seepage through soils, permeability of soils, embankment design, compaction, earth pressures and pressures in embankments, slope stability analysis, settlements and horizontal movements in embankments, and landslide stabilization. Prerequisite: CIEN 320 or graduate standing. **(DEMAND)**

**CIEN 626. Soil and Site Improvement****Credit 3(3-0)**

This course will introduce the following topics: methods of soil and site improvement, design techniques for dewatering systems, grouting, reinforced earth, in-situ densification, stone columns, slurry trenches, and the use of geotextile. Construction techniques for each system are described. Prerequisite: CIEN 320 and graduate standing. **(DEMAND)**

**CIEN 640. Advanced Structural Analysis****Credit 3(3-0)**

This course emphasizes the more complex concepts of structural analysis for determinate and indeterminate structural systems using both hand calculations and computer applications. Prerequisite: CIEN 540. **(DEMAND)**

**CIEN 641. Design of Reinforced Concrete Structures****Credit 3(3-0)**

This course emphasizes the more complex concepts of reinforced concrete design. The design of continuous beams, two slabs, and beams columns are addressed. Prerequisite: CIEN 540. **(DEMAND)**

**CIEN 642. Design of Prestressed Concrete Structures****Credit 3(3-0)**

This course uses the codes of the American Concrete Institute (ACI) and American Association of State Highway and Transportation Officials (AASHTO) to analyze and design prestressed concrete structures. Prerequisite: CIEN 540. **(DEMAND)**

**CIEN 644. Finite Element Analysis I****Credit 3(3-0)**

This course emphasizes the analysis of continuous structural systems as assemblages of discrete elements. Applications of the finite element method are made to the general field of continuum mechanics. Convergence properties and numerical techniques are discussed. Prerequisite: MATH 350. **(DEMAND)**

**CIEN 646. Structural Design Steel****Credit 3(3-0)**

This course uses the American Institute of Steel Construction (AISC) code to analyze and design steel structures. Prerequisite: CIEN 540. **(DEMAND)**

**CIEN 648. Structural Design in Wood****Credit 3(3-0)**

This course uses the wood products' codes to analyze and design wood structures. Prerequisite: CIEN 540. **(DEMAND)**

**CIEN 650. Geometric Design of Highways****Credit 3(3-0)**

This course emphasizes the development and application of geometric design concepts for rural and urban highways. Topics include functional classifications, design controls and criteria, elements of design, cross section elements, and intersection design. Prerequisite: CIEN 350. **(DEMAND)**



**CIEN 652. Urban Transport Planning Credits****Credits 3(3-0)**

This course is the study of urban transport planning using a decision-oriented approach. Discussions focus on the decision-making process, data requirements, evaluation processes, and systems performance analysis and program implementation. Prerequisites: CIEN 350 and MATH 224 or equivalent. **(DEMAND)**

**CIEN 656. Traffic Engineering****Credit 3(2-2)**

This course is the study of the theory and practice of the supply side of highway engineering. Specific applications will deal with the operation, design and control of highways and their networks. Topics include data collection techniques and the use of data in performing economic and performance studies, what those studies are and how to perform them, traffic flow theory, highway capacity, and network analysis. The student will be introduced to the use of various computer applications software available for each topic. Prerequisite: CIEN 350. **(DEMAND)**

**CIEN 658. Pavement Design****Credit 3(3-0)**

This course is the study of the design of highway and airport pavement structures. Topics include flexible and rigid pavement, cost analysis and pavement selection, drainage, earthwork, pavement evaluation and maintenance. Prerequisite: CIEN 350. **(DEMAND)**

**CIEN 660. Water Resources System Analysis****Credit 3(3-0)**

Mathematical modeling techniques are studied. Formulation of mathematical representations of complex water resources systems and their evaluation via linear programming, dynamic programming, non-linear programming and by the use of formal heuristics. Models for optimal sewer design, optimal sequencing (or capacity expansion) of projects, and reservoir systems planning and management are presented. **(DEMAND)**

**CIEN 664. Open Channel Flow****Credit 3(3-0)**

Advanced topics in open channel flow, design of open channels for uniform and nonuniform flow, wave interference, roughness effects, flow over spillways, water surface profiles, and energy dissipation methods will be discussed. Some computational methods in open channel flow are presented. Prerequisites: CAEE 362 and 363. **(DEMAND)**

**CIEN 668. Subsurface Hydrology****Credit 3(3-0)**

This is an introductory course in subsurface hydrology including principles of fluid (water) in saturated and unsaturated materials, well hydraulics, various methods of subsurface water flow systems, infiltration theory, and schemes for ground water basin management. Prerequisites: CAEE 362 and 364. **(DEMAND)**

**CIEN 670. Construction Engineering and Management****Credit 3(3-0)**

This course concentrates on the solution to problems in construction engineering and management. A variety of problems from the construction industry are presented to the students. The students form teams to develop solutions to these problems. Topics vary with available projects and student interest. Graduate students select a project in their area of interest for intensive study and submit a report. Prerequisite: Senior or graduate standing. **(DEMAND)**

**CIEN 699. Special Projects****Credit 3(3-0)**

This course provides study arranged on a special civil engineering topic of interest to the student and faculty. Topics may be analytical and/or experimental with independent study encouraged. Prerequisite: Consent of instructor. **(DEMAND)**



## DIRECTORY OF FACULTY

- Taher Abu-Lebdeh** ..... **Adjunct Associate Professor**  
 B.S., M.S., Yarmouk University, Jordan; Ph.D., Louisiana State University; Professional Engineer
- Ronnie S. Bailey** ..... **Associate Professor**  
 B.A., Howard University; M.U.P., University of Wisconsin
- Shoou-Yuh Chang** ..... **Professor**  
 B.S., M.S., National Taiwan University; M.S., University of North Carolina at Chapel Hill; Ph.D., University of Illinois at Urbana-Champaign; Professional Engineer
- Jiann-Long Chen** ..... **Assistant Professor**  
 B.S., National Taiwan University; M.S., Duke University, Ph.D., University of Cincinnati; Professional Engineer
- Peggy Fersner** ..... **Adjunct Assistant Professor**  
 B.S., Virginia Polytechnic Institute and State University; M.S., Clemson University; Professional Engineer
- Godfrey A. Gayle** ..... **Professor**  
 B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University
- Sameer A. Hamoush** ..... **Associate Professor**  
 B.S., University of Damascus; M.S., University of Nebraska; Ph.D., North Carolina State University; Professional Engineer
- Ronald N. Helms** ..... **Professor**  
 B.Arch., M.S.A.E., University of Illinois; Ph.D., Ohio State University; Professional Engineer
- William Mark McGinley** ..... **Professor**  
 B.S., M.S.C.E., Ph.D., University of Alberta; Professional Engineer
- Kenneth Murray** ..... **Professor and Associate Vice Chancellor**  
 B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University; Professional Engineer
- Emmanuel U. Nzewi** ..... **Associate Professor**  
 B.S., Michigan Tech University; M.S. & Ph.D., Purdue University; Professional Engineer
- Judy A. Perkins** ..... **Associate Professor**  
 B.S., Southern University; M.S., University of Illinois Urbana-Champaign; Ph.D., Georgia Tech (EIT)
- Richard Phillips** ..... **Adjunct Associate Professor**  
 B.S., Iowa State University; M.S., North Carolina State University; Professional Engineer
- Miguel Picornell** ..... **Professor**  
 B.S., Madrid Polytechnic University; M.S., Ph.D., Texas A&M University; Professional Engineer
- Robert Powell** ..... **Assistant Professor**  
 B.S., Stanford University; M.Arch., M.I.T.
- Manuel R. Reyes** ..... **Associate Professor**  
 B.S., M.S., University of the Philippines at Los Banos; M. Phil., Cranfield Institute of Technology; Ph.D., Louisiana State University
- Peter Rojas, Jr.** ..... **Associate Professor and Chairman**  
 B.S., Clarkson College of Technology; M.S., Ph.D., Cornell University; Professional Engineer

- M. Reza Salami** ..... **Professor**  
 B.S., M.E., Virginia Polytechnic Institute and State University; Ph.D., University of Arizona;  
 Professional Engineer
- Abolghasem Shahbazi** ..... **Professor**  
 B.S., University of Tabriz; M.S., University of California at Davis; Ph.D., Pennsylvania State  
 University (EIT)
- Harmohindar Singh** ..... **Professor**  
 B.Sc., M.Sc., Punjab University; M.S., Ph.D., Wayne State University; Professional Engineer

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## **Department of Computer Science**

<http://www.comp.ncat.edu>

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**Kenneth Williams, Interim Chairperson**

### **MISSION**

The mission of the Bachelor of Science Program in the Department of Computer Science is to provide the opportunity for its students to acquire the educational background necessary to pursue professional careers in the wide variety of positions in which Computer Science is required, or to continue their education toward advanced degrees in computer science. The primary purpose of the Department is to teach theory, abstraction, and design related to the field of computer science.

### **EDUCATIONAL OBJECTIVES**

1. Provide high quality education in computer science through exemplary teaching, scholarly research, and public service, focused on preparing our student to be distinctive leaders and significant contributors to society.
2. Provide a broad base in the design, implementation, and application of computer software systems and a functional background in computer hardware systems. This primary objective strives to impart lasting theoretical concepts and fundamental skills to prepare the students for lifelong learning as well as to familiarize them with current technology.
3. Give the student the opportunity to develop a well rounded background as an overall articulate individual by requiring study in written and oral communication, natural and social sciences, humanities and the arts, business and economics, as well as promoting their participation in social and professional activities.
4. Prepare students for advanced scholarly endeavors in computer science.
5. Develop professional skills and work ethics (ethics in the workplace and the ethics of working hard).

### **DEGREES OFFERED**

Computer Science - Bachelor of Science

Computer Science - Masters of Science \*

*\* See Graduate School Bulletin*

### **PROGRAM REQUIREMENTS**

The Computer Science major must complete 124 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

Included in the 124 semester hours are 54 hours in Computer Science courses and 23 hours in mathematics.

### **ACCREDITATION**

The undergraduate program in Computer Science, leading to the Bachelor of Science in Computer Science (BSCS) degree, is accredited by the Computer Science Accreditation Commission of the Computer Science Accreditation Board (CSAC-CSAB).

In Fall 2003, accreditation will be sought from the Computer Science Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC-ABET).

## CAREER OPPORTUNITIES

The Bureau of Labor Statistics of the U.S. Department of Labor in its "Occupational Outlook for College Graduates" continues to report that the employment outlook for computer-oriented graduates is very good. Opportunities in the area are expected to grow faster than the average of all occupations through the next decade.

### REQUIRED MAJOR COURSES IN COMPUTER SCIENCE

COMP 201	COMP 375	COMP 510
COMP 280	COMP 385	COMP 596
COMP 285	COMP 390	COMP 200
COMP 300	COMP 400	GEEN 102
COMP 301	COMP 401	GEEN 110
COMP 360	COMP 450	GEEN 120
COMP 365	COMP 467	GEEN 165
COMP 370	COMP 476	

### CURRICULUM GUIDE FOR COMPUTER SCIENCE

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
GEEN 110	0	GEEN 120	0
GEEN 102	2	GEEN 165	4
MATH 131	4	MATH 132	4
ENGL 100	3	MATH 123	3
Approved Social Sci. Elective	3	ENGL 101	3
PE or Health	1	Approved Social Sci. Elective	3
Soc. Sci./Human./Bus. Elective	3		17
	16		

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMP 200	0	COMP 201	0
COMP 280	3	COMP 285	3
MATH 223	3	INEN 270 or MATH 224	3
MATH 431	3	SPCH 250	3
Approved Humanities Elective	3	Approved Humanities Elective	3
PHED Elective	1	PHYS 241	3
Approved Science Elective	4	PHYS 251	1
	17		16

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMP 300	0	COMP 301	0
COMP 360	3	COMP 375	3
COMP 370	3	COMP 385	3
MATH 440 or MATH 450	3	COMP 510	3
Approved Science Elective	4	ENGL 331	3
COMP 365	3	COMP 467	3
	16		15



## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
COMP 400	0	COMP 401	0
COMP 450	3	COMP 596	3
COMP 390	3	Approved COMP Elective	3
COMP Elective (Approved)	3	Approved COMP Elective	3
Free Elective	3	Approved Business Elective	3
COMP 476	<u>3</u>		<u>12</u>
	15		

Total Credit Hours: 124

## ELECTIVES

### Computer Science Electives (3 credits each)

COMP 322, COMP 363, COMP 445, COMP 490, COMP 590, COMP 595, COMP 600, COMP 645, COMP 650, COMP 653, COMP 663, COMP 681, COMP 685, COMP 691, COMP 696

### Computer Science Electives Offered in other Departments

BUAD 440, BUED 342, ELEN 327, ELEN 427, ELEN 433, ELEN 617, ELEN 619, ELEN 627, INEN 415, MATH 460, MATH 631, MATH 665, MATH 675

### Science (Take any 2 of the following to constitute a two semester sequence)

BIOL 100, BIOL 101, BIOL 220, CHEM 106, CHEM 107, PHYS 242, SLSC 338

### Business & Economics electives

BUAD 220, BUAD 341, BUAD 422, BUAD 426, BUAD 430, BUAD 481, ECON 200, ECON 201

## COURSE DESCRIPTIONS IN COMPUTER SCIENCE

### Computer Science (Undergraduate)

#### COMP 120. Computers and Their Use

**Credit 3(2-2)**

This course provides a survey of the basic principles of computer hardware, computer communications, application software, operating systems, security, impact on society, use in organizations and systems development. Principles of programming are introduced. Information is at a level for the students to become informed users. This course is cannot be taken for credit by Computer Science majors. (F;S;SS)

#### COMP 160. Computer Programming I

**Credit 4(3-2)**

This is an introductory course in computer programming. Problem solving techniques and writing algorithms will be stressed. Students will be taught to write programs for such tasks as decision-making, text manipulation, and numerical computation. Computer organization principles (hardware and software) will also be presented. (F;S;SS)

#### COMP 165. Computer Programming II

**Credit 4(3-2)**

This is the second course in computer science. This course trains the students to design and implement programs in a high level language. It emphasizes problem solving techniques and applications of software engineering principles to design program solutions as cohesive, readable, and reusable modules. Prerequisite: GEEN 102 or COMP 160. (F;S;SS)

#### COMP 200. Computer Science Colloquium 3

**Credit 0**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Sophomore standing. (F)

**COMP 201. Computer Science Colloquium 4****Credit 0**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Sophomore standing. (S)

**COMP 280. Data Structures****Credit 3(3-0)**

This is the third course in the computer science sequence. It introduces abstractions (algorithm, data type, complexity) and programming tools (pointers, dynamic memory, and linked data structures). The course also examines essential data structures, (stacks, queues, trees, linked lists, and graphs). It analyzes and implements techniques such as hashing, sorting, searching, and priority queues, to solve general problems. The emphasis of the course is on building modular programs that can be changed to use different data structures and algorithms. Prerequisites: GEEN 165 or COMP 165, MATH 123. (F;S;SS)

**COMP 285. Design and Analysis of Computer Algorithms****Credit 3(3-0)**

This course covers analysis of efficient algorithms for sorting, searching, dynamic structure manipulation, path-finding, fast multiplication, and other problems. It introduces algorithmic techniques such as recursion, divide-and-conquer, and dynamic programming. It develops the following tools for algorithmic analysis: correctness proofs, algorithm synthesis, and discusses issues in non-computability. The course also overviews non-deterministic algorithms, and develops techniques to classify computationally hard problems. The concept of non-deterministic polynomial (NP)-completeness is introduced, and basic issues related to NP-completeness are discussed. Prerequisites: COMP 280, MATH 223, and MATH 131. (F;S;SS)

**COMP 300. Computer Science Colloquium 5****Credit 0**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Junior standing. (F)

**COMP 301. Computer Science Colloquium 6****Credit 0**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Junior standing. (S)

**COMP 322. Internet Systems****Credit 3 (3-0)**

This course addresses the structure and functionality of the Internet and software that exploits it. Topics include mark up languages, Web tools, static, dynamic and active web pages, multimedia in Web applications, communication protocols, client-server, computing, scripting, group communication support, e-commerce, and security. Topics also include systems for organizing and coordinating work at different sites, multiagent systems that exploit the Internet, and architectures to exploit the distributed computational power offered by the Internet. Prerequisite: COMP 285 (F;S;SS)

**COMP 360. Programming Languages****Credit 3(3-0)**

This course focuses on formal specification of programming languages, including definition of syntax and semantics: simple statements including precedence, infix, prefix, and postfix notations. It highlights global properties of algorithmic languages including sequence control, data structure implementation, scoping, storage management, grouping of statements, binding time, sub-routines, co-routines, and tasks. Prerequisite: COMP 285. (F;S)

**COMP 363. Object Oriented Programming****Credit 3(3-0)**

This is a course in object oriented program development. The main topics include encapsulation, polymorphism, inheritance, debugging and performance tuning. Prerequisite: COMP 280. (F;S)

**COMP 365. Programming Methodologies & Concepts****Credit 3(3-0)**

This course covers advanced programming techniques in order to enhance the student's knowledge and experience in programming. This course includes techniques dealing with advanced object oriented programming, human computer interaction, computer graphics and current pro-

gramming trends. This course will also cover AI techniques such as search strategies and knowledge representation. Prerequisite: COMP 285. (F;S;SS)

**COMP 370. Introduction to Computer Architecture** **Credit 3(3-0)**

This course teaches techniques for design and optimization of combinatorial logic circuits, flipflops, counters, registers and arithmetic concepts necessary to understand computer logic. Additional topics include assembly language programming, interrupt handling, and data representation. Prerequisite: COMP 280. (F;S)

**COMP 375. Computer Architecture and Organization** **Credit 3(3-0)**

This course explores the design of computer systems and their architectures. Topics include central processing unit architecture, microcode, system interconnections, memory systems, Input/Output systems, interrupt handling, peripherals and communications networks. Prerequisite: COMP 370. (F;S)

**COMP 385. Theory of Computing** **Credit 3(3-0)**

This course is the study of topics which include theory of finite state machine and automata; regular expressions; Turing machines; grammars; parsing; language hierarchy; machine design and construction; computability; unsolvability; halting problem; computational complexity; and recursive functions. The course also discusses issues in equivalence of various computational models, minimization, and characterizations. Prerequisite: COMP 360. (F;S)

**COMP 390. Social Implications of Computing** **Credit 3(3-0)**

This course examines the increasingly complex interaction between computer systems, our social fabric and ethics. Software and microprocessors control automobiles, banks, brokerage trading, aircraft, medical equipment, and just about every other device used in industrialized nations. Impacts of computerized systems upon personal privacy and citizen involvement in governance are examined in relation to the public policy questions of the day. The role and opportunity for historically under-represented groups will be explored. Interdisciplinary readings are stressed, along with required written and oral presentations and class debates. Prerequisite: ENGL 331. (F;S)

**COMP 397. Co-operative Industrial Experience I** **Credit 3(3-0)**

This is a supervised learning experience in an approved private or governmental facility. The student must be employed full time for at least one semester and must perform supervised work that will enhance his/her educational background in an area related to computer science. In addition to the supervisor's evaluation in the field, the student's performance will be evaluated by a departmental faculty committee, based upon the recommendation of the Director of the Co-operative Education Program, reports, informal portfolios and forum and/or seminar presented by the student upon his/her return to the university. Prerequisite: Permission of advisor. (F;S)

**COMP 400. Computer Science Colloquium 7** **Credit 0**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Senior standing. (F)

**COMP 401. Computer Science Colloquium 8** **Credit 0**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Senior standing. (S)

**COMP 445. An Introduction to Artificial Intelligence** **Credit 3(3-0)**

This course is an introduction to the theory of artificial intelligence and a survey of artificial intelligence application areas. It covers the foundational concepts related to knowledge representation and search strategies. An artificial intelligence language is presented to give programming experience in implementing basic artificial intelligence concepts. Some of the ap-



plications areas that are discussed include: game playing, expert systems, theorem proving, natural language understanding, machine learning, planning, and robotics. Prerequisites: COMP 285 and MATH 223. **(DEMAND)**

#### **COMP 450. Operating Systems**

**Credit 3(3-0)**

This is an introduction to the theory and practice of operating system design and implementation. Algorithmic techniques are presented for implementing process management, storage management, processor management, file systems, security, distributed systems, performance evaluation, and real time systems. Prerequisite: COMP 375. **(F;S)**

#### **COMP 467. Data Base Design**

**Credit 3(3-0)**

This course focuses on logical and physical organizations of large sets of related data. It covers issues in file structures as well as file and database management systems. It explores relational models, hierarchical models, directed graph models, data definition and manipulation languages, and relational calculus. Application oriented projects are required. Prerequisite: COMP 280. **(F;S)**

#### **COMP 476. Networked Computer Systems**

**Credit 3 (3-0)**

This course presents an overview of the technology, architecture and software used by systems of network-connected computers. The course will cover data transmission, local area network architecture, network protocols, internetworking, security, and World Wide Web technology. Students will write programs that run concurrently on multiple computers. Prerequisite: COMP 375 **(F; S)**

#### **COMP 490. Program Design and Analysis in Ada**

**Credit 3(3-0)**

This course presents a comprehensive overview of the Ada programming language: Data types, program and software design using libraries, private types, generics, exception handling, and parallel processing. Prerequisite: COMP 285. **(DEMAND)**

#### **COMP 510. Software Engineering**

**Credits 3(3-0)**

This course is an introduction to the principles underlying software specification, implementation, validation, and management. It addresses application of software engineering concepts to large software systems. Team effort is emphasized throughout the course. Prerequisite: COMP 360. **(F;S)**

#### **COMP 590. Special Topics in Computer Science**

**Credit 3(3-0)**

This course permits the exploration of advanced topics pertinent to student's program of study in a seminar setting. Prerequisite: Permission of advisor. **(DEMAND)**

#### **COMP 595. Senior Project I**

**Credit 3(3-0)**

This course is the first course in a two-semester sequence, which allows students the opportunity to design and implement a software project from start to finish. Projects started in this course will be completed in COMP 596, giving the student the opportunity to work on a project of significant size. Students taking this course must take COMP 596. Prerequisite: COMP 285. Corequisite: COMP 510. **(F;S;SS)**

#### **COMP 596. Senior Project II**

**Credit 3(3-0)**

This course allows students the opportunity to design and implement a software project from start to finish. Projects started in COMP 595 must be completed in this course for students working on a yearlong project. Student choosing to do a semester project must start and complete the project in this course. This course gives the student the opportunity to work on a software project of significant size. Prerequisite: COMP 510 **(F;S;SS)**

#### **COMP 600. Special Topics in Computer Science**

**Credit 3(3-0)**

This course permits the exploration of advanced topics pertinent to student's program of study in a seminar setting. **(F;S)**



**COMP 645. Artificial Intelligence****Credits 3(3-0)**

This course presents the theory of artificial intelligence, and application of the principles of artificial intelligence to problems that cannot be solved or cannot be solved efficiently by standard algorithmic techniques. Topics include search strategies, production systems, heuristic search, expert systems, inference rules, computational logic, natural language processing, knowledge representation, and knowledge-based systems. Predicate calculus is discussed. An artificial intelligence language is presented as a vehicle for implementing concepts of artificial intelligence. Prerequisite: COMP 445. **DEMAND**

**COMP 650. Advanced Operating Systems****Credits 3(3-0)**

This course centers on operating systems for multi-processing environments: concurrent processes, mutual exclusion, job scheduling, memory, storage hierarchy, file systems, security, and distributed processing. Also discussed are virtual resource management strategies. A design project involving the construction of operating facilities is produced. **(F;S)**

**COMP 653. Computer Graphics****Credits 3(3-0)**

This is a course in fundamental principles and methods in the design, use, and understanding of computer graphic systems. Topics include coordinate representations, graphics functions, and software standards. Hardware and software components of computer graphics are discussed. The course presents graphics algorithms. It also introduces basic two-dimensional transformations, reflection, shear; windowing concepts, clipping algorithms, window-to-viewpoint transformations, segment concept, files, attributes and multiple workstation, and interactive picture-construction techniques. Prerequisite: COMP 285. **(F;S)**

**COMP 663. Principles of Compiler Design****Credit 3(3-0)**

This course emphasizes the theoretical and practical aspect of constructing compilers for computer programming languages. The course covers principles, models and techniques used in the design and implementation of compilers, interpreters, and assemblers. Topics include lexical analysis, parsing arithmetic expressions and simple statements, syntax specification, algorithms for syntax analysis, object code generation, and code optimization. Each student will develop and implement a compiler. Prerequisites: COMP 375 and 385. **(DEMAND)**

**COMP 681. Formal Methods****Credit 3(3-0)**

In this course, formal methods that model the software development process will be studied. Fundamental and practical methodologies and theories, including set theory and the foundations of software engineering will be emphasized. Applications to formal specifications, object-oriented programming and data modeling will be examined. Topics include set theory, relations and functions, induction and recursion, symbolic logic, complex models, and application case studies. **(S)**

**COMP 685. Advanced Analysis of Algorithms****Credit 3(3-0)**

This course discusses the design and analysis of efficient algorithms and algorithmic paradigms. Applications include sorting, searching dynamic structures, graph algorithms, computationally hard problems, and NP completeness. **(F;S)**

**COMP 696. Information, Privacy and Security**
**Credit 3(3-0)**

This course examines the security and privacy issues associated with informational systems. There are cost/risk tradeoffs to be made. Discussed are topics such as technical, physical, and administrative methods of providing security, access control, identification, and authentication. Encryption is examined, including Data Encryption Standards and public key cryptosystems. Management considerations such as key protection and distribution, orange book requirements, and OSI data security standards are covered. Privacy legislation is covered, as is current cryptographic research. **(DEMAND)**

DIRECTORY OF FACULTY

- Shearon A. Brown**
**Adjunct Associate Professor**

B.S., M.S., North Carolina A&T State University; M.S., University of Illinois
- Edward Carr**
**Adjunct Assistant Professor**

B.S., Wingate University; M.S., Western Carolina University; M.S., North Carolina A&T State University
- Albert Esterline**
**Associate Professor**

B.A., Lawrence University; M.Litt., Ph.D., University of St. Andrews; M.S., Ph.D., University of Minnesota
- Dechang Gu**
**Associate Professor**

B.S., Hefei Polytechnic University; M.E., Chinese Academy of Science; M.S., Ph.D., State University of New York
- Ray Hawkins**
**Adjunct Associate Professor**

B.S., University of Baltimore; M.B.A., M.S., Pace University
- Mohammed Ketel**
**Visiting Assistant Professor**

B.S., Ecole Nationale Polytechnique d'Alge (Algeria), M.S., Purdue University, M.S., Ph.D., Polytechnic University
- Jung Hee Kim**
**Assistant Professor**

B.A., Korea University, M.S., Ph.D., Illinois Institute of Technology
- Stephen Providence**
**Assistant Professor**

B.A., M.S., Ph.D., City University of New York
- Kenneth A. Williams**
**Associate Professor and Chair**

B.S., M.S., Michigan Technological University; Ph.D., University of Minnesota
- Sung H. Yoon**
**Assistant Professor**

B.S., Seoul National University; M.S., North Carolina A&T State University, Ph.D., North Carolina State University
- Anna Yu**
**Professor**

B.S., Xiamen University; M.S., Hefei Polytechnic University; Ph.D., Stevens Institute of Technology
- Dorothy Yuan.**
**Assistant Professor**

B.S., Huazhong University of Science and Technology, Ph.D., Institute of Automation, Chinese Academy of Sciences, Ph.D., Florida Atlantic University

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## **Department of Electrical and Computer Engineering**

<http://www.ece.ncat.edu>

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**John C. Kelly, Jr., Interim Chairperson**

### **MISSION**

The mission of the BSEE program is to educate our students with the knowledge and skills relevant to the practice of electrical engineering, to instill in them the desire for continuing education, and to maintain a supportive environment for the students, faculty and staff.

### **EDUCATIONAL OBJECTIVES**

1. To graduate electrical engineers with a knowledge foundation in the fundamental areas of electrical engineering which will permit them to gain employment in their profession or continue with graduate education.
2. To include throughout the electrical engineering curriculum experiences in the design process, functioning in teams, and in developing laboratory skills.
3. To provide curricular experiences in science, mathematics, the humanities, and other core requirements of the University.
4. To develop in our students the ability to communicate effectively.
5. To maintain the academic program standards to satisfy the requirements of accreditation.

### **DEGREES OFFERED**

Electrical Engineering – Bachelor of Science

Electrical Engineering – Master of Science \*

Electrical Engineering – Doctor of Philosophy \*

*\*See the Graduate School Bulletin*

### **PROGRAM REQUIREMENTS**

The Electrical Engineering major must complete 128 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

### **ACCREDITATION**

The undergraduate program in Electrical Engineering, leading to the Bachelor of Science in Electrical Engineering (BSEE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

### **CAREER OPPORTUNITIES**

A degree in this field prepares a student for careers in electronics, communications and signal processing, power and control engineering, computer engineering, or for graduate study in electrical or computer engineering.

## REQUIRED MAJOR COURSES IN ELECTRICAL ENGINEERING

ELEN 200	ELEN 320	ELEN 433
ELEN 201	ELEN 327	ELEN 460
ELEN 202	ELEN 328	ELEN 466
ELEN 300	ELEN 400	ELEN 475
ELEN 301	ELEN 425	ELEN 598
ELEN 302	ELEN 427	ELEN 599
ELEN 306	ELEN 430	

## CURRICULUM GUIDE FOR ELECTRICAL ENGINEERING

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL 101	3
MATH 131	4	MATH 132	4
African American Elective	3	PHYS 241	3
PHED Elective	1	PHYS 251	1
GEEN 100	2	CHEM 106	3
GEEN 102	2	CHEM 116	1
GEEN 110	<u>0</u>	GEEN 103	2
	15	GEEN 120	<u>0</u>
			17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 431	3	MATH 231	4
PHYS 242	3	ELEN 300	3
PHYS 252	1	ELEN 306	2
ELEN 200	3	ELEN 327	3
Global Studies Elective	3	ELEN 328	1
INEN 270	3	ELEN 320	3
ELEN 201	<u>0</u>	PHED Elective	1
	16	ELEN 202	<u>0</u>
			17

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ELEN 475	3	ELEN 460	3
ELEN 400	3	ELEN 466	1
ELEN 427	3	ELEN 430	3
ELEN 433	1	ELEN 4xx	3
ELEN 425	3	MEEN 313	3
Humanities Elective	3	INEN 260	2
ELEN 301	<u>0</u>	ELEN 302	<u>0</u>
	16		15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ELEN 598	3	ELEN 599	3
ECON 200/1	3	Humanities Elective	3
ELEN 4xx	3	ELEN xxx	3
ELEN xxx	3	Tech. Elective	3
ELEN 6xx	3	ELEN 6xx	<u>3</u>
ELEN 6xx	<u>2</u>		15
	17		

Total Credit Hours: 128



## ELECTIVES

**Technical Elective I:** Select one course from the following:

ELEN 410, ELEN 449, ELEN 470

**Technical Elective II:** Select one course from the following:

ELEN 4xx, ELEN 6xx

**Technical Elective III:** Select one course from the following:

COMP xxx, MEEN 337, MEEN 413

## COURSE DESCRIPTIONS IN ELECTRICAL AND COMPUTER ENGINEERING

### (Undergraduate)

**ELEN 200. Electric Circuit Analysis** **Credit 3(3-0)**

This course cover circuit analysis using Kirchhoff's Laws, loop and nodal analysis, Thévenin's, and Norton's theorems, etc., for resistive circuits with DC sources are studied. The transient behavior of first of order (RC, RL) circuits will be covered. Co requisite: MATH-431. (F;S;SS)

**ELEN 201. Sophomore Colloquium I** **Credit 0 (1-0)**

This course provides the students with exposure to current issues in Electrical Engineering.

**ELEN 202. Sophomore Colloquium II** **Credit 0 (1-0)**

This course provides the students with exposure to current issues in Electrical Engineering.

**ELEN 300. Electric Circuit Analysis II** **Credit 3 (3-0)**

This course is a continuation of ELEN-200. It covers sinusoidal steady state solutions to linear circuits in the time and frequency domain. Laplace transforms, transfer functions, Fourier series, Bode plots, passive and active filters, transformers, two-port circuits, and polyphase circuits will also be covered. Prerequisite: ELEN 200 and MATH 431.

**ELEN 301. Junior Colloquium I** **Credit 0 (1-0)**

This course provides the students with exposure to current issues in Electrical Engineering.

**ELEN 302. Junior Colloquium II** **Credit 0 (1-0)**

This course provides the students with exposure to current issues in Electrical Engineering.

**ELEN 306. Circuits and Systems Laboratory** **Credit 2(1-3)**

This course covers the proper use of laboratory instrumentation, principles of measurements, experimental verification of transient and steady state response, frequency response, and resonance of systems with linear passive elements. Computer simulation and theoretical analysis of networks are compared with laboratory experimental results using actual circuits. Co-requisite: ELEN-300.

**ELEN 320. Electronics I** **Credit 3(3-0)**

A study of active electronic devices with emphasis on terminal behavior, physical electronics, linear and nonlinear modeling. Prerequisite: ELEN 200. (F;S)

**ELEN 327. Digital Logic** **Credit 3(3-0)**

The study of Boolean algebra; techniques for design and optimization of combinational logic, sequential logic design, flip-flops, counters, registers and arithmetic concepts necessary to understand computer logic. Prerequisite: ELEN 200. (F;S)

**ELEN 328. Digital Logic Laboratory** **Credit 1(0-3)**

This course deals with circuit's design and implementation of combinational logic, sequential logic, flip-flops, counters, registers and arithmetic units. Corequisite: ELEN 327. (F;S)

**ELEN 400. Linear Systems And Signals** **Credit 3(3-0)**

This course is a continuation of ELEN-300 that covers the time-domain and Fourier analysis of discrete-time signal and discrete-time systems, state-space analysis, frequency response, digi-

tal filter design and introduction to discrete signal processing techniques. Prerequisite: ELEN 300. (F;S)

**ELEN 410. Linear Control Systems** **Credit 3(3-0)**

Introduction to control theory course that includes: control system modeling and representation, features of feedback control systems, state space representation, time domain analysis, root locus, and design compensation. Prerequisite: ELEN 400. (S)

**ELEN 425. Introduction to Electromagnetics** **Credit 3(3-0)**

A study of electromagnetic concepts and effects using vector analysis. Prerequisite: MATH 231. (F;S)

**ELEN 427. Introduction To Microprocessors** **Credit 3(3-0)**

An introduction to microprocessor hardware and software design assembly language and machine language programming, and microprocessor interfacing and applications is provided. Prerequisite: ELEN 327. (F;S)

**ELEN 430. Power Systems, Energy Conversion And Electric Machinery** **Credit 3(3-0)**

Study of the electric power system as an interconnection of energy conversion and transmission devices; electric machinery; energy and power; and operation of a power system. Prerequisites: ELEN 300 and 425. (F;S)

**ELEN 433. Microprocessors Laboratory** **Credit 1(0-3)**

Practical experience in hardware and software, assembly language and machine language programming, microprocessor interfacing and applications. Prerequisite: ELEN 328. Corequisite: ELEN 427. (F;S)

**ELEN 436. Power Systems, Energy Conversion And Electric Machinery Laboratory** **Credit 1(0-3)**

A study of power circuits and the behavior of motors and generators by laboratory experimentation. Prerequisite: ELEN 306. Corequisite: ELEN 430. (F;S)

**ELEN 440. Electrical Circuits and Systems** **Credit 3(3-0)**

This course covers power and energy concepts; basic R, RC, RL, and RLC circuits; three phase circuits; ideal transformers; diodes and ideal op amp circuits; and logic circuits. The Laplace transform method will be introduced and used to solve circuit problems. Prerequisites: MATH 431 and PHYS 242.

**ELEN 449. Introduction to Communication Systems** **Credit 3(3-0)**

This course covers the fundamental principles of modulation theory including amplitude, single- and double-sideband, frequency, phase, pulse amplitude, pulse duration, pulse code modulation methods; and their applications to communication systems with random signals and noise. Prerequisite: ELEN 400. Corequisite: INEN 270. (S)

**ELEN 450. Principles of Electromagnetic Waves** **Credit 3(3-0)**

This course emphasizes the following: the basic postulates of electromagnetism; the integral laws of free space; the differential laws in free space; static fields; and time varying fields. Prerequisite: ELEN 425. (S)

**ELEN 452. Wireless Communication Systems** **Credit 3(3-0)**

This course is an introductory level of wireless communications. Fundamental theory and analysis of wireless mobile communication systems are introduced, including characterization of radio propagation, channel modeling and coding, and a summary of wireless communication standards and multiple access techniques. Also covered are an overview of information networks and a comparison of wireless and conventional communication systems. Prerequisite: ELEN 400. (F)

**ELEN 459. Digital and Data Communications****Credit 3(3-0)**

This course is an introduction to digital and data communications. The fundamental theory and applications of modern communication systems are discussed, including a general overview of the data communications area, telephone systems, channel coding, concept of data link protocols, interface standard, modems, multiplexing, multiple access and ISDN. Prerequisite: ELEN 400. (F)

**ELEN 460. Electronics II****Credit 3(3-0)**

This course is a continuation of Electronics I. Principles of semiconductor electronic circuits; single stage and multistage amplifier circuits, frequency response of transistor amplifiers, operational amplifiers, and feedback systems. Coordinated laboratory work. Prerequisite: ELEN 320. (F;S)

**ELEN 466. Electronics II Laboratory****Credit 1(0-3)**

This course includes design and analysis of semiconductor electronic circuits using discrete and integrated circuits. Emphasis is on design and experimental verification of amplifiers switching circuits, etc. using linear active devices. Prerequisite: ELEN 306. Corequisite: ELEN 460. (F;S)

**ELEN 470. Properties of Materials for Electrical Engineering****Credit 3(3-0)**

The effects of atomic, molecular, and crystal structure on the electrical and physical properties of conducting, insulating and semiconductor materials used in electrical engineering. Prerequisite: ELEN 425. (F)

**ELEN 475. Applied Engineering Analysis****Credit 3(3-0)**

This course will cover application of linear algebra, complex variable, and discrete mathematics in solving engineering problems. Pre-requisite: MATH-231, MATH-431

**ELEN 598. Senior Design Project I****Credit 2(1-3)**

This is part one of a two-part capstone design course for the undergraduate electrical engineering program. Each team (typically four students) select a design project from topics suggested by faculty or industry. The teams are responsible for (1) designing and developing project specifications, (2) planning a budget, and (3) monthly progress reports. Teamwork, technical writing, communications, and project management are stressed throughout the semester. Prerequisites: ELEN 433 and 466. (F;S)

**ELEN 599. Senior Design Project II****Credit 2(1-3)**

This is a continuation of ELEN- Design Project I. Each team is responsible for (1) implementing the design, (2) demonstrating a workable prototype, and (3) monthly progress reports, and (4) a formal report on the project. Teamwork, technical writing, communications, and project management are stressed throughout the semester. Prerequisite: ELEN 598. (F;S)

**ELEN 602. Semiconductor Theory and Devices****Credit 3(3-0)**

This course is a study of the phenomena of solid-state conduction and devices using band models, excess carriers in semiconductors, p-n junctions, and devices. Prerequisite: ELEN 460 or consent of instructor. (F)

**ELEN 606. Digital Electronics****Credit 3(3-0)**

This course covers analysis, design and applications of digital integrated circuits. These circuits may include resistor-transistor logic (RTL), diode transistor logic (DTL), transistor-transistor logic (TTL), emitter-coupled logic (ECL), metal-oxide-semiconductor (MOS) gates and n-channel MOS (NMOS) logic, complementary MOS (CMOS) logic, Bipolar CMOS (BICMOS) structures, memory circuits, and interfacing circuits. Prerequisite: ELEN 460 or consent of instructor. (F)



**ELEN 608. Analog Electronics****Credit 3(3-0)**

This course covers the analysis, design and application of analog integrated circuits. These circuits may include operational amplifiers, voltage comparators, voltage regulators, Integrated Circuit (IC) power amplifiers, Digital to Analog (D/A) and Analog to Digital (A/D) converters, voltage-controlled oscillators, phase-locked loops, and other special-function integrated circuits. Prerequisite: ELEN 460 or consent of instructor. (S)

**ELEN 610. Power Electronics****Credit 3(3-0)**

Introduction to power semiconductor devices, naturally commutating converters, AC regulators, DC switching regulators, static power inverters, and application techniques. Prerequisite: ELEN 320.

**ELEN 614. Integrated Circuit Fabrication Methods****Credit 3(3-0)**

This course presents the various processes utilized in the fabrication of semiconductor integrated circuits. Oxidation, diffusion, ion implantation, metalization, and epitaxial processes will be discussed. Limits on device design and performance will be considered. Prerequisite: ELEN 470 or consent of instructor. (S)

**ELEN 615. Silicon Device Fabrication Laboratory****Credit 2(1-3)**

Laboratory experiments in the fabrication of silicon p-n junction diodes, MOS capacitors and MOS field effect transistors will be performed. Oxidation, diffusion, Photolithography, and metalization techniques will be presented. Co requisite: ELEN- 614. (S)

**ELEN 621. Embedded Systems Design****Credit 3(3-0)**

This course is a survey of modern methods for specifying algorithms, simulating systems, and mapping specifications onto embedded systems. It presents an introduction to the technologies used in the design and implementation of programmable embedded systems, such as programmable processors, cores, memories, dedicated and configurable hardware, software tools, schedulers, code generators, and system-level design tools. Prerequisite: ELEN 427 or consent or instructor. (F)

**ELEN 622. Embedded Systems Design Laboratory****Credit 2(1-3)**

This laboratory course is an introduction to developing processor-based embedded systems. The development tools include a C++ cross compiler, an Electronically Programmable read Only Memory (EPROM), and an Application Specific Integrated Circuit (ASIC) programmer. A student project is part of the laboratory requirements. Prerequisite: ELEN 433 or equivalent. Corequisite: ELEN 621. (F)

**ELEN 623. Digital Systems****Credit 3(3-0)**

Digital system top-down design and analysis will be presented. Topics include timing, power and performance issues in digital circuits, Very High Speed Integrated Circuit Hardware Description Language (VHDL)-based system analysis and synthesis, hardware-software co-design, data-flow models, and digital system primitives. Prerequisite: ELEN 427 or consent of instructor. (F)

**ELEN 624. Computer Organization and Architecture****Credit 3(3-0)**

This course covers the design of modern uniprocessors, and their memory and Input/Output (I/O) subsystems. Performance, microarchitecture, and design philosophies used to realize pipeline, superscalar, Reduced Instruction Set Computer (RISC) and Complete Instruction Set Computer (CISC) processors will be studied. Prerequisite: ELEN 427 or consent of instructor. (S)

**ELEN 629. Very Large Scale Integrated Circuit (VLSI Design)****Credit 3(3-0)**

This course will study CMOS technology and device characteristics in order to develop layout design rules for VLSI circuit building blocks such as inverters and logic gates. Layout tech-



niques for complex gates and designing combinational and sequential logic circuits will be introduced. Prerequisite: ELEN 427 or consent of instructor. (S)

**ELEN 630. VLSI Design Laboratory**

**Credit 2(1-3)**

This is an introduction of Computer Aided Design (CAD) tools for integrated circuit design and verification. These CAD tools include geometric pattern generators, design rule checkers, circuit simulators, and Programmable Logic Array (PLA) generators. A student design project is part of the laboratory requirements. Co requisite: ELEN 629. (S)

**ELEN 650. Digital Signal Processing I**

**Credit 3(3-0)**

This course develops a working knowledge of the basic signal processing functions, such as digital filtering spectral analysis, and detection/post-detection processing. Methods of generating the coefficients for digital filters will be derived. Alternate structures for filters, such infinite impulse response, will be compared. The effect of finite register length will be covered. Prerequisite: ELEN 400 or consent of instructor. (F)

**ELEN 651. Digital Signal Processing Laboratory**

**Credit 2(1-3)**

Experiments and student projects will be performed which are related to the practical applications of digital signal processing techniques to data acquisition, digital filtering, control, spectral analysis, and communications. Co requisite: ELEN 650. (F)

**ELEN 656. Probability and Random Processing**

**Credit 3(3-0)**

This course covers sample space and events, conditional probabilities, independent events, Bayes formula, discrete random variables, expectation of random variables, joint distribution, conditional expectation, Markov chains, stationary processes, ergodicity, correlation and power spectrum of stationary processes, and Gaussian processes. Prerequisite: ELEN 400 or consent of instructor. (F)

**ELEN 657. Digital Image Processing**

**Credit 3(3-0)**

This course deals with concepts and techniques for digital image analysis and processing. Topics include image representation, image enhancement, edge extraction, image segmentation, geometric structure, feature extraction, knowledge representation, and image understanding. Prerequisite: ELEN 400 or consent of instructor. (S)

**ELEN 658. Digital Image Processing Laboratory**

**Credit 2(1-3)**

This laboratory course will demonstrate many important and practical applications of digital image processing techniques. The experiments include image enhancement, feature extraction, Hough transform, various transforms in spatial and frequency domains, image understanding and quantization. Prerequisite: ELEN 400 or consent of instructor.

**ELEN 661. Power Systems Analysis**

**Credit 3(3-0)**

The course studies power system representation, transmission lines, symmetrical and asymmetrical faults, electric power flow, power systems control and stability. Prerequisite: ELEN 430. (F)

**ELEN 662. Advanced Power Systems Laboratory**

**Credit 2(1-3)**

In this laboratory course, basic concepts, transmission lines, power flows, faults, and transient and steady-state stability will be investigated. Consent of instructor. (F)

**ELEN 668. Automatic Control Theory**

**Credit 3(3-0)**

This course introduces the theory of linear systems represented by state equations. Topics include the Jordan canonical form, solutions to state equations, relationship to transfer functions, stability, controllability, and pole placement design. Prerequisite: ELEN 410 or consent of instructor. (F)

- ELEN 669. Control Laboratory

Credit 2(1-3)

This laboratory course demonstrates methods of system identification and control. Verifications of control system designs in both the time domain and frequency domain will be studied. Co requisite: ELEN 668. (F)
- ELEN 674. Genetic Algorithms

Credit 3(3-0)

This course covers the theory and application of genetic algorithms. Genetic algorithms combine a Darwinian survival-of-the-fittest with a randomized, yet structured, information exchange to form an improved search mechanism with surprising robustness. Engineering applications of genetic algorithms for design and control will be presented. Prerequisite: ELEN 400. (S)
- ELEN 678. Introduction to Artificial Neural Networks

Credit 3(3-0)

This course introduces neural network design and development. Emphasis is on designing and implementing information processing systems that autonomously develop operational capabilities in adaptive responses to an information environment. Prerequisite: ELEN 400 or consent of instructor. (F)
- ELEN 679. Machine Intelligence Laboratory

Credit 2(1-3)

This laboratory will explore the design and development of intelligent, autonomous, physical agents. An emphasis will be placed upon machine intelligence experiments with visual sensors, tactile sensors, robotic manipulators and autonomous inexpensive mobile robots. Prerequisite: ELEN 433 or consent of instructor. Corequisite: ELEN 678. (F)
- ELEN 685. Selected Topics in Engineering

Credit 3(3-0)

This lecture course is used to introduce engineering topics of current interest to students and faculty. The subject matter will be identified before the beginning of the course. Prerequisite: Consent of instructor. (F;S)
- ELEN 686. Special Projects

Credit 1-3 variable

This is an investigation of an engineering topic, which is arranged between a student and a faculty advisor. Project topics may be analytical and/or experimental and should encourage independent study. Prerequisite: Consent of instructor. (F;S)

### DIRECTORY OF FACULTY

- Ali Abul-Fadl .....

Associate Professor

B.S., M.S., Ph.D., University of Idaho
- Marwan Bikdash .....

Associate Professor

B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University
- Eric A. Cheek, Sr. ....

Adjunct Associate Professor

B.S. Carnegie-Mellon University; M.S., Ph.D. Howard University
- Ward J. Collis .....

Associate Professor

B.S., M.S., Northwestern University; Ph.D., Ohio State University
- Numan Dogan .....

Associate Professor

B.S., Karadeniz Technical University, M.S., Polytechnic Institute of New York, Ph.D., University of Michigan
- Abdollah Homaifar .....

Professor

B.S., M.S., State University of New York-Stony Brook; Ph.D., University of Alabama
- Shanthi Iyer. ....

Professor

B.S., M.S., Delhi University; Ph.D., Indian Institute of Technology

- John C. Kelly, Jr.**..... **Associate Professor and Chair**  
B.S., Ph.D., University of Delaware
- Jung Kim** ..... **Professor**  
B.S., Yonsei University, M.S., Ph.D., North Carolina State University
- Gary Lebby** ..... **Research Professor**  
B.S., M.S., University of South Carolina, Ph.D., Clemson University
- Clinton Lee** ..... **Associate Professor**  
B.S., California Institute of Technology; M.S., North Carolina A&T State University; Ph.D., North Carolina State University
- Robert Li** ..... **Associate Professor**  
B.S., Duke University; M.S., Purdue University; Ph.D., University of Kansas
- David Olson** ..... **Associate Professor**  
B.S., M.E., Michigan Technological University; Ph.D., University of Utah
- David Yong-Duan Song** ..... **Associate Professor**  
B.S., Cheng Du University of Science and Technology, P.R. China; M.S., ChongQuing University, RR. China; Ph.D., Tennessee Technological University
- Alvernon Walker** ..... **Associate Professor**  
B.S.E.E., M.S.E.E., North Carolina A&T University; Ph.D., North Carolina State University
- Chung Yu** ..... **Professor**  
B.Eng., McGill University; M.S., Ph.D., Ohio State University

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## **Department of Industrial and Systems Engineering**

<http://www.ncat.edu/~iedept>

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**Eui H. Park, Chairperson**

### **MISSION**

The mission of the BSIE program at North Carolina A&T State University is to provide educational experiences in an environment that allows students to have a sense of belonging and purpose. The educational experiences are designed to produce competent industrial engineers who will serve the business and government needs with their expertise in designing, improving and installing integrated systems of people, materials, information, equipment and energy.

### **EDUCATIONAL OBJECTIVES**

The BSIE Program Objectives are established by the faculty of the industrial engineering department. In determining these objectives, the stakeholders of the BSIE Program are consulted at least once every five years. Furthermore, the objectives are verified for consistency with the mission, goals and objectives of the University and the College of Engineering. The following are the objectives of the BSIE Program:

1. To provide a meaningful undergraduate experience to students enrolled in the BSIE program that results in technically and professionally competent industrial engineers that meet the needs of a variety of employers in the manufacturing and service industry
2. To graduate industrial engineers who are qualified to work in an information technology based global economy
3. To maintain quality assurance in the academic processes in order to meet the needs of accreditation bodies such as ABET and SACS
4. To provide resource and outreach to business, government and the community in the Central Piedmont region of North Carolina
5. To provide sufficient training to highly motivated and qualified students for pursuing graduate studies and research
6. To further the profession of industrial engineering by active participation in professional society activities

### **DEGREES OFFERED**

Industrial Engineering – Bachelor of Science

Industrial Engineering – Master of Science \*

Industrial Engineering – Doctor of Philosophy \*

*\* See Graduate School Bulletin*

### **PROGRAM REQUIREMENTS**

The Industrial Engineering major must complete 128 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

Included in the 128 semester hours are 107 hours of specific required courses and 20 hours of electives. Students are required to select 3 hours of Mathematics elective, 3 hours of African American History elective, 6 hours of Foreign Language electives, 6 hours of technical electives, and 2 hours of Physical Education electives.



## ACCREDITATION

The undergraduate program in Industrial Engineering, leading to the Bachelor of Science in Industrial Engineering (BSIE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

## CAREER OPPORTUNITIES

Industrial engineering is one of the major engineering fields in the United States with a significant unmet need. Starting salaries for industrial engineers are competitive with those of electrical, mechanical, and chemical engineering. Due to the education industrial engineers receive and the type of experience they gain in industry, they often switch to management careers in five to ten years following graduation.

## REQUIRED MAJOR COURSES IN INDUSTRIAL ENGINEERING

INEN 246	INEN 346	INEN 415
INEN 255	INEN 355	INEN 424
INEN 260	INEN 365	INEN 485
INEN 270	INEN 371	INEN 489
INEN 289	INEN 372	INEN 495
INEN 325	INEN 375	INEN 500
INEN 330	INEN 380	
INEN 335	INEN 389	

## CURRICULUM GUIDE FOR INDUSTRIAL ENGINEERING

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 100	3	ENGL Elective	3
CHEM 106	3	MATH 132	4
CHEM 116	1	PHYS 241	3
GEEN 100	2	PHYS 251	1
GEEN 102	2	FOLA Elective	3
MATH 131	4	GEEN 103	2
PHED Elective	1	PHED Elective	1
GEEN 110	0	GEEN 120	0
	16		17

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
INEN 246	3	INEN 255	3
INEN 260	2	INEN 270	3
INEN 289	1	INEN 380	3
MATH 431	3	MATH 231	4
MEEN 260	2	PHYS 242	3
FOLA Elective	3	PHYS 252	1
PSYC 320	3		17
	17		

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
INEN 325	3	INEN 335	3
INEN 330	3	INEN 355	3
INEN 346	3	INEN 365	3
INEN 375	3	INEN 372	2
INEN 389	1	MEEN 313	3
INEN 371	2	ELEN 440	3
	15		17

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
INEN 415	3	INEN 485	3
INEN 424	3	MATH Elective	3
INEN 495	3	IE Technical Elective	3
MEEN 413	3	IE Technical Elective	3
INEN 500	1	HIST Elective	<u>3</u>
INEN 489	<u>1</u>		15
	14		

Total Credit Hours: 128

## COURSE DESCRIPTIONS IN INDUSTRIAL AND SYSTEMS ENGINEERING

### **INEN 101. Introduction to Computing for Industrial Engineers** **Credit 2(1-2)**

This course provides an introduction to computers and computer programming for industrial engineers. Students learn a general purpose programming language for rapid application development, object-oriented computing, procedural algorithm development, and integration with common application software.

### **INEN 102. Graphical Visualization for Industrial Engineers** **Credit 2(1-2)**

This course introduces computer-aided drafting in two dimensions, multi-view drawings, plant and building layouts, reading blueprints and interpreting engineering drawings, flow process charts, and plotting functions in 2 and 3 dimensions.

### **INEN 246. Industrial Production Processes** **Credit 3(2-2)**

This course introduces various types of manufacturing processes including metal casting, forming, shaping, material removal and joining. The course also covers basic jig, fixture and gage design. Material removal rates and machining formulas are also explored. Laboratory projects are required. Prerequisite: INEN 102 or GEEN 103.

### **INEN 255. Methods Engineering** **Credit 3(2-2)**

This course introduces the concepts of methods analysis, documentation and improvement, time and motion study, determination of time standards using time study, work sampling and predetermined times standards. The course also discusses job evaluation, productivity measures, and learning curves. Laboratory projects are required. Prerequisite: INEN 246.

### **INEN 260. Engineering Economy** **Credit 2(2-0)**

This course introduces the concept of time value of money, cash flows, and the methods of evaluating alternatives based on present worth, annual worth, rate of return, payback period and cost benefit analysis. The course also introduces breakeven analysis, replacement analysis, depreciation methods and the effect of income taxes and inflation on economy studies. Prerequisite: MATH 131

### **INEN 270. Engineering Statistics** **Credit (3-0)**

This course introduces data presentation and analysis, frequency distributions, probability concepts and axioms of probability. Random variables, discrete and continuous probability distributions, calculus based probability calculations, joint distributions, conditional probability and independence are covered. Independence of events is applied to engineering system reliability. Students are introduced to concepts of sampling, sampling distributions, estimation, confidence intervals, hypothesis testing, and regression analysis. Prerequisite: MATH 132.

### **INEN 289. Engineering Teams and Leadership** **Credit 1(1-0)**

This course covers industrial relations and organizational structures, project management, teamwork, inter-personal skills, and leadership in an engineering organization. A freshman level assessment will be administered. Prerequisites: GEEN 100 and ENGL 100.

**INEN 325. Quality Assurance** **Credit 3(3-0)**

This course introduces the concepts of quality control and assurance. Topics include statistical control charts, attributes and variable sampling plans, quality philosophies, process capability, quality function deployment, ISO 9000 and quality auditing. Prerequisite: INEN 270.

**INEN 330. Operations Research I** **Credit 3(3-0)**

Deterministic models of operations research are discussed with special emphasis on linear programming. Topics covered include simplex algorithm, transportation problem, network flow, dynamic programming, integer programming, multiple criteria and nonlinear programming models. Prerequisite: MATH 431.

**INEN 335. Operations Research II** **Credit 3(3-0)**

This course introduces the concepts of probabilistic operations research models and solution techniques. Specific topics covered include Poisson process, Markov chains, queuing models and their applications, decision analysis, inventory models, risk analysis, and project networks. Prerequisites: INEN 270 and MATH 431.

**INEN 346. Automation and Production Systems** **Credit 3(2-2)**

This course introduces the concepts of automation such as programmable controllers and robotics, design for manufacturing and assembly, material selection, flexible manufacturing systems, group technology, just-in-time manufacturing, process planning, and economics of manufacturing. Prerequisite: IINEN 246.

**INEN 355. Production Control** **Credit 3(3-0)**

This course introduces the concepts of demand forecasting, aggregate production planning, inventory control, project planning, line balancing and job scheduling. Students will be expected to work on projects involving enterprise resource planning and supply chain management. Prerequisites: INEN 330 and 380.

**INEN 365. Facilities Design** **Credit 3(2-2)**

The course presents a study of the theory and practice of facilities design: activity and flow analysis, space requirements, layout techniques, material handling, warehousing, location selection, and problem-solving with computer-aided layout techniques. Design projects in plant layout required. Prerequisite: INEN 255.

**INEN 371. Human Factors I** **Credit 2(1-2)**

This course introduces ergonomics and biomechanics concepts. Topics include psychomotor work capabilities, anthropometry, environmental stressors, physical workload, safety, hazard and risk factor identification, work station design, and material handling. Data collection methods and report writing are emphasized. Lab projects are required. Prerequisite: INEN 255.

**INEN 372. Human Factors II** **Credit 2(1-2)**

This course introduces elements of cognitive human factors. Topics include human sensation and perception, cognition, information processing, attention, signal detection theory, mental workload, and decision-making. Lab projects are required. Prerequisite: PSYC 320.

**INEN 375. Design of Experiments** **Credit 3(3-0)**

This course introduces various experimental designs to analyze data for research projects, process improvements, human factors studies and surveys. Designs covered include Latin Squares, complete and incomplete block designs, one, two, and three variable factorials, fractional factorials, and 2k designs. Suitable laboratory apparatus will be set up to study the effect of design parameters on selected response. Statistical software will be utilized to analyze results. Prerequisite: INEN 270.

**INEN 380. Information Technology for Industrial Engineers** **Credit 3(2-2)**

This course introduces the planning and design techniques used for enterprise information systems. The course addresses basic concepts of database systems, network systems, system



analysis and planning, and human-computer systems. The role of computers in industrial and systems engineering is stressed. Prerequisite: GEEN 102.

**INEN 389. Global Issues for Engineers**

**Credit 1(1-0)**

This course introduces trade agreements such as NAFTA, role of government in international commerce, trade barriers, United Nations Regulatory Agencies, survey of labor laws in various parts of the world, technological capabilities of different countries, and global agreements on environmental protection. A sophomore level assessment will be administered. Prerequisite: Junior standing.

**INEN 415. Discrete Event Simulation**

**Credit 3(3-0)**

Concepts of random variate generation, Monte Carlo and discrete event simulation will be introduced. Simulation languages are introduced in this course. One general simulation language is taught in depth. The use of simulation modeling in design and improvement of production and service is emphasized. Industrial Engineering design projects will be required. Prerequisites: INEN 375, 380, and senior standing.

**INEN 424. Computer Aided Design and Manufacturing**

**Credit 3(2-2)**

This course covers Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), and their integration. Topics include computer-aided design, process planning, Numerical Control (NC) programming and operation, Group Technology (GT), rapid prototyping, integrated production planning and control, and integrated manufacturing data systems. Design projects will be required. Prerequisites: INEN 346, 380, and senior standing.

**INEN 485. Systems Integration**

**Credit 3(3-0)**

This course covers applications and case studies that address cost, human factors, energy, information, and materials as it applies to the design of production and service systems. Group work will be emphasized. Selection of appropriate analytical, computational and experimental techniques will be required. Prerequisites: INEN 365, 371, 372, and senior standing.

**INEN 489. Professionalism and Ethics for Engineers**

**Credit 1(1-0)**

This course covers professional licensing, professional practice, ethics, laws and regulations such as the Americans with Disabilities Act, and the role of continuing education. A junior level assessment will be administered. Prerequisites: Senior standing.

**INEN 495. Design Projects in Industrial Engineering**

**Credit 3(0-6)**

This course requires students to work on a real-life design project from industry. The project requires students to analyze, design, and recommend through economic justification the best design alternative. A final report and an oral presentation are required. Students demonstrate the feasibility of their designs in terms of safety, aesthetics, reliability, cost, social and ethical values. This course is only open to ISE majors. Prerequisite: Senior standing as IE major.

**INEN 500. General Engineering Topics Review**

**Credit 1(0-2)**

The course includes the review of material included in the Fundamentals of Engineering (FE) exam. Class same as GEEN 500. Prerequisite: Senior standing.

**INEN 625. Information Systems**

**Credit (3-0)**

This course introduces the planning, design, implementation and evaluation of industrial information systems. Analysis and design techniques, organization of data, current software tools, client-server architectures, and current database technologies are presented. The role of information systems in global manufacturing, distribution, and services is addressed. Design projects are required. Prerequisite: Senior/graduate standing.

**INEN 632. Robotic Systems and Applications**

**Credit 3(2-2)**

This course addresses design, analysis, implementation and operation of robotics in production systems. End effectors, control systems, vision systems, sensors, off-line programming,



and simulation of robotic systems are covered. Methods for designing robotic work areas are emphasized. Design projects are required. Prerequisite: Senior/graduate standing.

**INEN 635. Material Handling Systems Design** **Credit 3(2-2)**

This course focuses on design, and analysis of materials handling and flow in manufacturing facilities and warehouses. Principles, functions, equipment and theoretical approaches in materials handling are discussed. Tools for the automation of materials handling are introduced. Design projects are required. Design projects are required. Prerequisite: Senior/graduate standing.

**INEN 648. Industrial Biomechanics** **Credit 3(3-0)**

This course explains and analyzes the mechanical behavior of the musculoskeletal system and component tissue during industrial work situations. Topics include: biomechanical and musculoskeletal models, mechanical work capacity, and bioinstrumentation. Applications to human-machine systems design and analysis are emphasized. Prerequisites: Senior/graduate standing.

**INEN 658. Project Management** **Credit 3(3-0)**

This course addresses project proposal preparation, resource and cost estimation, project planning, organizing and controlling, network diagrams, and computerized project planning systems. Prerequisite: Senior/graduate standing.

**INEN 664. Human Performance, Risk Analysis & Systems Safety** **Credit 3(3-0)**

This course addresses the relationship between system safety, risk and human performance at work. Quantitative and qualitative methods of investigating and analyzing accidents, system failures and risk in human-machine system environment are discussed. Design projects that incorporate the Occupational Safety and Health Act are emphasized. Prerequisite: Senior or graduate standing in industrial engineering or consent of instructor.

**INEN 665. Human-Machine Systems** **Credit 3(2-2)**

This course introduces behavioral and psychological factors such as sensory, perception and attention, decision-making and cognitive processes. This course emphasizes the applications of these factors to the design and development of man-machine systems. Design projects are required. Prerequisite: Senior or graduate standing in industrial engineering or consent of instructor.

**INEN 694. Selected Topics in Engineering** **Variable Credits (1-3)**

Selected engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Prerequisite: Senior or graduate standing in industrial engineering.

**DIRECTORY OF FACULTY**

- Christopher Geiger** ..... **Assistant Professor**  
B.S., North Carolina A&T State University; M.S., Ph.D., Purdue University
- Xiaochun Jiang** ..... **Assistant Professor**  
M.S.M.E., East China Institute of Technology; MS, Nanjing University of Science & Technology; Ph.D., Clemson University
- Emmett Lodree** ..... **Assistant Professor**  
B.S., M.S., University of New Orleans; MSIE, Ph.D., University of Missouri-Columbia
- Daniel Mountjoy** ..... **Assistant Professor**  
B.S., M.S., Wright State University; Ph.D., North Carolina State University
- Celestine Ntuen** ..... **Professor**  
NCE, CRS University; B.S., M.S., Ph.D., West Virginia University

- Steven Oneyear** ..... **Adjunct Assistant Professor**  
 B.S., M.S., University of Wisconsin
- Eui Park** ..... **Professor and Chairperson**  
 B.S., Yonsei University; M.S., Ph.D., Mississippi State University
- Bala Ram** ..... **Professor**  
 B.S., M.S., India Institute of Technology; Ph.D., State University of New York; Professional Engineer
- Sanjiv Sarin** ..... **Professor and Associate Dean**  
 B.S., M.S., Indian Institute of Technology; Ph.D., State University of New York; Professional Engineer
- Younho Seong** ..... **Assistant Professor**  
 B.S.I.E., M.S.I.E., Inhwa University; Ph.D., State University of New York
- Paul Stanfield** ..... **Assistant Professor**  
 B.S., M.S., North Carolina State University; M.B.A., University of North Carolina at Greensboro; Ph.D., North Carolina State University; Professional Engineer
- Silvanus J. Udoka** ..... **Associate Professor**  
 B.S., Weber State University; M.S., Ph.D., Oklahoma State University
- Charles VandeZande** ..... **Adjunct Associate Professor**  
 B.S., Lawrence University; M.S., Rutgers University

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## **Department of Mechanical and Chemical Engineering**

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**Leonard Uitenham, Chairperson**

### **DEGREES OFFERED**

Chemical Engineering – Bachelor of Science

Mechanical Engineering – Bachelor of Science

Chemical Engineering – Master of Science \*

Mechanical Engineering – Master of Science \*

Mechanical Engineering – Doctor of Philosophy \*

*\* See the Graduate School Bulletin*

### **GENERAL PROGRAM REQUIREMENTS**

Each program in the Department is individually accredited and program requirements are defined by the individual programs.

### **COOPERATIVE EDUCATION PROGRAM IN MCEN**

Participation in Cooperative Education (Co-op) is highly recommended for students in the Department of Mechanical and Chemical Engineering. The program is an effective means of providing industrially relevant experience beyond that which can be accomplished in the classroom. Participation in the program serves not only as a form of financial aid for students, but also provides them an advantage in seeking full-time employment opportunities. To facilitate student participation in the program, most department courses required for graduation are offered at least twice per year with some also offered in the summer.

At least three semesters of work are required alternating with academic semesters. After qualifying for the Co-op Program your first year (GPA above 2.8), you continue to be eligible to remain in the program by maintaining satisfactory academic (GPA above 2.8) and work records. Please refer to the program handbooks for the Mechanical Engineering and the Chemical Engineering programs offered in the department for information on specific co-op policies as well as typical co-op employers and locations

### **CHEMICAL ENGINEERING PROGRAM**

<http://www.ncat.edu/~chemeng>

**Keith Schimmel, Program Director**

### **MISSION**

The mission of the BSCHE program at North Carolina A&T State University is to provide students with a learning experience in chemical engineering that will instill in them a life-long sense of learning, social responsibility, and commitment to improving the quality of life for all people. The Department seeks to provide an atmosphere of dedicated service to the student by providing instruction, counseling, program planning, career guidance, and any other supportive student services to facilitate their growth and success in the academic and professional communities.

## EDUCATIONAL OBJECTIVES

The following are the current educational objectives of the BSChE Program.

1. To provide a quality chemical engineering educational experience, which results in technically and professionally competent chemical engineering graduates to meet the needs of employers.
2. To prepare students majoring in chemical engineering by teaching them the skills needed to enter the chemical engineering profession or to continue their education towards and advanced degree, regardless of race, creed, national origin or sex.
3. To maintain a quality assurance philosophy in all academic processes in order to meet the requirements of AIChE/EAC and SACS accreditation.
4. To provide an atmosphere of dedicated teaching and service to the student by providing counseling, program planning, career guidance, and any other supportive student services to facilitate student growth and success in the academic and professional communities.
5. To participate actively in the application of chemical engineering principles to the solution of the critical problems facing the society and the world.
6. To become recognized nationally as a center for chemical engineering scholars, educators and researchers.

## DEGREES OFFERED

Chemical Engineering – Bachelor of Science

Chemical Engineering – Master of Science \*

*\*See the Graduate School Bulletin*

## PROGRAM REQUIREMENTS

The chemical engineering major must complete 128 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

## ACCREDITATION

The undergraduate program in Chemical Engineering, leading to the Bachelor of Science in Chemical Engineering (BSChE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

## CAREER OPPORTUNITIES

Chemical engineers have a broad enough background to do almost anything they choose. All branches of engineering emphasize the application of the principles of mathematics and physics to solve problems and create products for the community at large. Chemical engineers, however, are unique in emphasizing applications, which are also founded in chemistry and biology. Chemical engineers are primarily concerned with processes and equipment in which material changes in composition or state. Chemical engineers often become employed by a company which manufactures a variety of chemical products, including plastics, forest products, gasoline, food, textile fibers, and pharmaceuticals. Chemical engineers also find career opportunities in the fabrication of microelectronic devices, the control of industrial and municipal wastes, and the application of biological science to produce chemicals from biomass through genetic engineering. The assignments given to chemical engineers can be highly diverse, ranging from design, construction, operations research, and product develop-



ment to technical sales and management. A career in chemical engineering is often a route to top management. In addition to the industrial opportunities that await chemical engineering graduates, opportunities exist for graduate study in engineering as well as such diverse areas as medicine, law, business and biotechnology. In view of the many options open to its graduates, chemical engineering can be a particularly good choice for students who have broad interests, but have not yet defined their career objectives.

The chemical engineering curriculum is designed to give students the knowledge and scientific tools needed to prepare them for a career in industry or to go on to graduate school. It is also intended to be flexible enough to accommodate a broad range of educational interests. An option that is recommended for students with advanced placement is a dual degree in Chemistry.

### REQUIRED MAJOR COURSES IN CHEMICAL ENGINEERING PROGRAM

CHEN 108	CHEN 309	CHEN 408
CHEN 109	CHEN 310	CHEN 410
CHEN 200	CHEN 316	CHEN 430
CHEN 208	CHEN 320	CHEN 440
CHEN 209	CHEN 330	CHEN 450
CHEN 220	CHEN 340	CHEN 501
CHEN 300	CHEN 350	MCEN 310
CHEN 308	CHEN 400	

### CURRICULUM GUIDE FOR CHEMICAL ENGINEERING PROGRAM

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEN 108	0	CHEN 109	0
GEEN 100	2	GEEN 103	2
GEEN 110	0	GEEN 120	0
CHEM 106	3	ENGL Elective	3
CHEM 116	1	PHED Elective	1
ENGL 100	3	PHYS 241	3
MATH 131	4	PHYS 251	1
Social Science Elective	<u>3</u>	Social Science Elective	3
	16	MATH 132	<u>4</u>
			17

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEN 208	0	CHEN 209	0
CHEN 200	4	CHEN 220	2
CHEM 107	3	CHEM 221	3
CHEM 117	1	MATH 431	3
PHYS 242	3	MEEN 260	2
PHYS 252	1	CHEN 310	4
MATH 231	<u>4</u>	CHEM 223	<u>2</u>
	16		16

#### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEN 308	0	CHEN 309	0
CHEN 300	3	CHEN 320	3
CHEN 350	3	CHEN 330	2
CHEM 441	3	ELEN 440	3
Advanced CHEM Elective	4	MCEN 310	3
CHEN 316	<u>3</u>	CHEN 340	3
	16	PHED Elective	<u>1</u>
			15

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEN 408	0	CHEN 440	3
CHEN 400	4	CHEN 450	1
CHEN 410	2	CHEN Elective	3
CHEN 430	3	CHEN Elective	3
CHEN 501	1	Advanced CHEM Elective	3
MEEN 313	3	Humanities Elective	<u>3</u>
Humanities Elective	<u>3</u>		16
	16		

Total Credit Hours: 128

## ELECTIVES

The chemical engineering program has a total of nine elective courses. The courses must be distributed in the areas discussed below:

### Chemical Engineering Electives (2 Courses)

The chemical engineering curriculum has engineering elective courses that are taken in the senior year. Both courses must be chemical engineering courses and must contain two credits of engineering design. The list of approved elective courses and their design content is given in the CHEN Undergraduate Handbook.

### Social Sciences and Humanities Electives (4 Courses)

Students must take two **related** 3-credit courses in humanities (H) and two **related** three-credit courses in social sciences (SS). In addition, all North Carolina A&T State students must take one of their electives in African-American or African studies and one of their electives in multi-cultural studies. The approved list of social science and humanities electives is found in the appendix of the CHEN *Undergraduate Handbook*.

### Advanced Chemistry Electives (3 Courses)

Students must take at least 7 credits of advanced chemistry. The following list of courses has been approved to satisfy the advanced chemistry electives: *CHEM 222, CHEM 224, CHEM 231, CHEM 232, CHEM 251, CHEM 252, CHEM 442, CHEM 443, CHEM 444, CHEM 451, CHEM 452*

## Mechanical Engineering Program

<http://www.ncat.edu/~meen/>

**Shih-Liang Wang, Program Director**

## MISSION

The mission of the BSME program at North Carolina A&T State University is to prepare our students for the broad practice of mechanical engineering and for graduate education in mechanical engineering and the many related fields such as materials engineering and aerospace engineering.

## EDUCATIONAL OBJECTIVES

The objectives of the Bachelor of Science in Mechanical Engineering program are:

1. To produce graduates who are technically competent and properly trained to pursue a successful career in the engineering profession,
2. To provide graduates who will succeed in MS-level educational programs provided they meet customary admission criteria in such programs,

3. To develop in students an understanding of the basic engineering and physical sciences, mathematics, and the methods of analysis and synthesis, and to stress creativity so they will become successful engineering designers, capable of developing solutions to real-world engineering problems,
4. To promote, clear, logical thinking and an open, inquiring, and creative mind,
5. To foster an understanding of the social, safety, and ethical implications of technical decisions, and
6. To provide an education environment conducive to professional growth and inquiry.

### **DEGREES OFFERED**

Mechanical Engineering – Bachelor of Science  
 Mechanical Engineering – Master of Science \*  
 Mechanical Engineering – Doctor of Philosophy \*

*\*See Graduate School Bulletin*

### **PROGRAM REQUIREMENTS**

The Mechanical Engineering major must complete 126 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

### **ACCREDITATION**

The undergraduate program in Mechanical Engineering, leading to the Bachelor of Science in Mechanical Engineering (BSME) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

### **CAREER OPPORTUNITIES**

The mechanical engineering program provides students with a quality education that will allow immediate entry into industry, government, private practice or graduate work. The largest proportion of graduates takes jobs with industry. Such jobs can be classified under the following general headings: design, testing, development, production, research, technical marketing, and technical management. Career opportunities for mechanical engineers are possibly the most diverse of any engineering discipline.

### **REQUIRED MAJOR COURSES IN MECHANICAL ENGINEERING PROGRAM**

MEEN 210	MEEN 416 or MEEN 415*	MEEN 501
MEEN 220	MEEN 440	MEEN 562
MEEN 260	MEEN 441	MEEN 565
MEEN 300	MEEN 442 or MEEN 576*	MEEN 572
MEEN 335	MEEN 446	MEEN 573
MEEN 336	MEEN 460	MEEN 574
MEEN 337	MEEN 474	
MEEN 400	MEEN 500	

*\* Aerospace specialization students only*

# CURRICULUM GUIDE FOR MECHANICAL ENGINEERING PROGRAM

## FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
GEEN 100	2	GEEN 103	2
GEEN 110	0	GEEN 120	0
MATH 131	4	ENGL 101 or 331	3
HIST Elective <sup>1</sup>	3	MATH 132	4
ENGL 100	3	PHYS 241	3
CHEM 106	3	PHYS 251	1
CHEM 116	<u>1</u>	HIST Elective <sup>1</sup>	<u>3</u>
	16		16

## SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MEEN 210	3	MEEN 260	2
MEEN 220	3	MEEN 336	3
MEEN 335	3	INEN 260	2
PHYS 242	3	Soc. Science Elective <sup>2</sup>	3
PHYS 252	1	MATH 431	3
MATH 231	<u>4</u>	ECON 200/201	<u>3</u>
	17		16

## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Humanities Elective <sup>3</sup>	3	MEEN 400	2
MEEN 300	2	MEEN 416 <sup>4</sup>	3
MEEN 337	3	MEEN 440	3
MEEN 441	3	MEEN 442 <sup>4</sup>	3
MEEN 446	3	MEEN 460	3
ELEN 440	<u>3</u>	MEEN 474	<u>3</u>
	17		17

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MEEN 501	1	MEEN 500	2
MEEN 562	3	MEEN 574 <sup>4</sup>	3
MEEN 565	3	MEEN 6XX <sup>4</sup>	3
MEEN 572	1	Humanities Elective <sup>3</sup>	3
MEEN 573 <sup>4</sup>	3	Health/PE Elective <sup>5</sup>	<u>2</u>
MEEN 6XX <sup>4</sup>	<u>3</u>		13
	14		

Total Credit Hours: 126

<sup>1</sup> 6 hrs of HIST Elective Required. Note Black/Global Studies requirement. Consult with advisor.

<sup>2</sup> 3 hrs of Soc Sci Elective required Note Black/Global Studies requirement. Consult with advisor.

<sup>3</sup> 6 hrs of HUMANITIES Elective required. Note Black/Global Studies requirement. Consult with advisor.

<sup>4</sup> 6 hrs of TECH Elective required from Technical Electives List; others as approved by advisor. Students following the Aerospace specialization should substitute MEEN 415 for MEEN 416, MEEN 576 for MEEN 442, and choose Aerospace related technical electives and a senior design project as approved by their advisor

<sup>5</sup> 2 hrs of PHED Elective required. Any two 1-credit PHED courses or PHED 200.

## ELECTIVES

**Technical Electives for BSME majors (except Aerospace Specialization students)**

GEEN 601, 602, MEEN 606, 612, 614, 645, 646, 647, 650, 657, 663, 667, 668, 670, 671, 675

**Technical Electives for BSME majors (Aerospace Specialization students)**

MEEN 651, 652, 653, 654, 655, 656



## **COURSE DESCRIPTIONS IN MECHANICAL AND CHEMICAL ENGINEERING PROGRAMS**

### **Mechanical and Chemical Engineering (Undergraduate)**

#### **MCEN 310. Introduction to Biological Applications of Engineering      Credits 3(3-0)**

This course is an introduction to the application of engineering principles and methods to problems in medicine, the integration of engineering with biology, and the emerging industrial opportunities. Examples from a variety of engineering disciplines will be provided. The ethical concerns associated with some emerging life science applications will be explored. Lab experiments will be utilized in the course to provide hands-on experience with life science concepts. Prerequisites: CHEM 106, MATH 431 and PHYS 242 (S)

#### **MCEN 550. Co-operative Industrial Experience in Engineering      Credits 3(3-0)**

This course is a supervised learning experience in a specified private or governmental facility. Students who have completed at least three co-op sessions with the same company may enroll in this course. Course requirements include employer evaluations of the student for each co-op session and student evaluations of the employer for each session. Written reports for each co-op session and an oral report summarizing the work experiences will be presented to a faculty committee. Prerequisites: Senior standing in engineering and permission of instructor. (F;S)

#### **MCEN 610. Biological Applications of Engineering      Credits 3(3-0)**

This course covers the application of engineering principles and methods to problems in medicine, the integration of engineering with biology, and the emerging industrial opportunities. Examples from a variety of engineering disciplines will be provided. The ethical concerns associated with some emerging life science applications will be explored. Lab experiments will be utilized in the course to provide hands-on experience with life science concepts. Required is a research paper on an emerging application of life science in engineering. Prerequisite: Consent of instructor. (S)

### **Chemical Engineering (Undergraduate)**

#### **CHEN 108/109. Chemical Engineering Freshman Colloquium I & II      Credits 0(0-0)**

Topics of interest to freshman majoring in chemical engineering are presented and discussed. Topics include advising, retention, curriculum, AIChE, coop, internships, scholarships, career planning and contemporary issues in chemical engineering. The course also provides a forum for students to interact with CHEN faculty and the Department Chair. Prerequisite: Freshman standing in CHEN. [CHEN 108 (F); CHEN 109(S)]

#### **CHEN 200. Chemical Process Principles      Credits 4(3-2)**

This course is an introduction to the analysis of chemical processes with an emphasis on mass and energy balances. Stoichiometric relationships, ideal and real gas behavior are also covered. Topics also include an introduction to the first law of thermodynamics for open and closed systems and the solution of problems with comprehensive mass and energy balance equations. Prerequisites: CHEM 106, GEEN 100, and GEEN 103. Corequisites: CHEM 107, MATH 132, and PHYS 241. (F;S)

#### **CHEN 208/209. Chemical Engineering Sophomore Colloquium I & II      Credits 0 (0-0)**

Topics of interest to sophomores majoring in chemical engineering are presented and discussed. Topics include advising, retention, scholarships, curriculum, AIChE, coop, industrial internships, career planning, contemporary issues in chemical engineering and gaining stakeholder input from students. The course also provides a forum for students to interact with CHEN faculty and the Department Chair. Prerequisites: Sophomore standing in CHEN. [CHEN 208 (F); CHEN 209 (S)]

#### **CHEN 220. Introduction to Numerical Methods in Engineering      Credits 2(1-2)**

This course introduces contemporary computational methods and tools for numerical analysis in engineering. Root-finding, numerical differentiation and integration, interpolation, systems

of linear algebraic equations, linear and nonlinear regression, and ordinary differential equations are covered. Prerequisites: GEEN 103, MATH 132, and PHYS 241 (MEEN 210 accepted as an equivalent course.) (S)

**CHEN 300. Fluid Mechanics**

**Credits 3(2-2)**

This course examines the static and dynamic behavior of fluids. Applications include fluid flow in pipes, flow past immersed bodies, motion of particles in fluids, and transportation and metering of fluids. Concepts covered include dimensional analysis and similitude. Design and safety aspects of piping networks, fluid flow and metering equipment are required. Prerequisites: CHEN 200 (with a grade of C or higher), CHEN 220, MATH 431, PHYS 242 and course equivalent to MEEN 416. (F;S;S)

**CHEN 308/309. Chemical Engineering Junior Colloquium I & II**

**Credits 0(0-0)**

Topics of interest to juniors majoring in chemical engineering are presented and discussed. Topics include advising, retention, scholarships, curriculum, AIChE, coop, industrial internships, career planning, contemporary issues in chemical engineering and gaining stakeholder input from students. The course also provides a forum for students to interact with CHEN faculty and the Department Chair. Prerequisite: Junior standing in CHEN. [CHEN 308 (F); CHEN 309 (S)]

**CHEN 310. Chemical Engineering Thermodynamics**

**Credits 4(3-2)**

The course is a study of thermodynamics principles with special emphasis on chemical process applications and equilibria. Topics included are the first and second laws, properties of single and multi-component systems, expansion and compression of fluids, heat engines, thermodynamics of flow processes, phase equilibria and chemical reaction equilibria. Prerequisites: MATH 431 and CHEN 200 (with a "C" or higher); Corequisite: MATH 231. (F;S)

**CHEN 316. Analysis of Chemical Process Data**

**Credits 3(3-0)**

This course introduces contemporary computational methods and tools for designing experiments and analysis of data. The course covers statistical inference, empirical models, strategies for efficient experimentation and their applications in engineering process analysis. Statistical methods including error analysis, curve fitting and regression, analysis of variance, confidence intervals, hypothesis testing, and control charts are covered. The use of the ASPEN PLUS simulation package for process design and development is also covered. Prerequisites: GEEN 103, MATH 132 and PHYS 251. (F)

**CHEN 320. Heat Transfer**

**Credits 3(2-2)**

The course covers the fundamentals of heat conduction, convection, radiation, boiling and condensation, and heat exchangers. Design and safety aspects of heat transfer equipment are required. Prerequisites: Math 231, CHEN 300 (with a grade of "C" or higher), CHEN 310, and course equivalent to MEEN 562. (F;S)

**CHEN 330. Chemical Engineering Laboratory I**

**Credits 2(0-6)**

Students conduct laboratory studies on unit operations involving fluid mechanics, thermodynamics, and heat transfer. The studies include open-ended experiments and comparisons between theory and experimental results. Statistical analysis of data, experimental design, laboratory safety and quality reporting are stressed. Students are required to complete formal and informal reports and make oral presentations with visual aids. Prerequisites: ENGL elective and CHEN 316; Corequisite: CHEN 320 (F;S)

**CHEN 340. Process Dynamics and Control**

**Credits 3(2-2)**

The course covers the methods for controlling chemical process equipment including the dynamic response of process equipment and systems. Simulation methods are stressed in the design of control systems. Modes of control, controller characteristics and control loop design are stressed. Computer control and statistical process control are introduced. Prerequisites: MATH 431, CHEN 300, and CHEN 310. Corequisite: CHEN 320. (S)

**CHEN 350. Chemical Reaction Engineering****Credits 3(2-2)**

This course covers the fundamentals of chemical kinetics, rate theories and chemical reactor design. Homogeneous reactors are emphasized. Heterogeneous systems and catalysis are introduced. Students design chemical reactors for batch and flow systems. Prerequisites: CHEM 221, MATH 431, and CHEN 200 (with a "C" or higher). Corequisites: MATH 231, CHEN 300, and CHEN 310. (F)

**CHEN 400. Mass Transfer Operations****Credits 4(3-2)**

The course is a study of diffusion, diffusional operations and stagewise separation principles. Topics include the quantitative treatment and design of mass transfer equipment involving equilibrium stage contacting. Operations included are distillation, absorption, extraction, ion exchange, drying, humidification, chromatography and membrane separations. Prerequisite: CHEN 320 (with a grade of "C" or higher). (F)

**CHEN 408. Chemical Engineering Senior Colloquium****Credits 0(0-0)**

Topics of interest to first semester seniors majoring in chemical engineering are presented and discussed. This course provides monthly meetings to present and discuss topics of interest to seniors majoring in chemical engineering. Topics include advising, retention, scholarships, curriculum, AIChE, coop, industrial internships, career planning, contemporary issues in chemical engineering and gaining stakeholder input from students. The course also provides a forum for students to interact with CHEN faculty and the department chairperson. Prerequisite: Senior standing in CHEN. (F)

**CHEN 410. Chemical Engineering Laboratory II****Credits 2(0-6)**

The course is a continuation of CHEN 330 with emphasis on open-ended laboratory studies and comparisons between theory and experimental results. Topics include mass transfer, process dynamics and control, reaction kinetics, and reactor design. Statistical analysis of data, experimental design, laboratory safety and quality reporting are stressed. Students are required to complete formal and informal reports and make oral presentations with visual aids. Prerequisites: CHEN 320 and 330. Corequisites: CHEN 340, 350, and 400. (F;S)

**CHEN 430. Process Design I****Credits 3(2-2)**

The steps in creating a chemical process design from concept to completion and plant operation are studied. Topics included are engineering economics, simulation, process equipment design, ethics, and process safety. Students complete an open-ended process component design. Prerequisites: CHEN 320 (with a "C" or higher). Corequisites: CHEN 350 and CHEN 400. (F)

**CHEN 440. Process Design II****Credits 3(1-4)**

This capstone design course emphasizes the design of a complete chemical process including a literature survey, mass and energy balances, flow diagrams, equipment selection and design, and cost and economic analysis. Students develop and use computer-aided simulation to model process equipment design. Projects include extensive use of the ASPEN PLUS simulation package. Oral and written presentations of the design projects are required. Prerequisites: CHEN 400, 350, and 430. (S)

**CHEN 450. Chemical Engineering Topics Review****Credits 1(1-2)**

This course reviews all of the CHEN topics in the BS program. The course prepares the student to pass the CHEN comprehensive exam and the CHEN specified part of the fundamentals of engineering exam. Senior standing in chemical engineering. (S)

**CHEN 501. General Engineering Topics Review****Credits 1(0-3)**

The course covers and reviews the engineering topics included in the General Engineering sections of the Fundamentals of Engineering (FE) exam. The course emphasizes extensive problem solving and helps students prepare for the FE exam. Senior Standing in chemical engineering. (F,S,SS)



**CHEN 505. Selected Topics in Chemical Engineering** **Credits 3(3-0)**

An in-depth lecture course covering several advanced topics in chemical engineering. Topics will be selected to match student interest and faculty expertise. A specific course description will be available at the beginning of each semester that the course is offered. Prerequisites: Senior standing in CHEN courses. **(DEMAND)**

**CHEN 510. Independent Study in Chemical Engineering** **Credits 3(0-6)**

An independent study project is completed on a single topic in chemical engineering. Topics are arranged to fit the mutual interests of the student and a faculty advisor. The study includes the design of an apparatus, a process, or a procedure. Final written and oral presentations of the work to a faculty committee are required. Prerequisites: Permission of instructor. **(F;S)**

**CHEN 574. Interdisciplinary Design**

This course gives senior students the opportunity to work in interdisciplinary teams. Lectures will include ethics, teamwork and professional practice. Student teams complete an industry-based design project that is broader in scope than is normally available in CHEN 440. An oral presentation and a written report are required. This course may be taken as a substitute for CHEN 440. Prerequisite: CHEN 430. **(DEMAND)**

**CHEN 600. Advanced Process Control** **Credits 3(3-0)**

The course covers advanced methods for controlling chemical processes. Adaptive control, feed forward control, cascade control, multi-variable control, multi-loop control, and programmable logic controllers are discussed. Emphasis is placed on computer control using Z-transforms, sampled-data systems, and digital controller design. Prerequisites: Senior or graduate standing in CHEN courses. **(DEMAND)**

**CHEN 605. Biochemical Engineering** **Credits 3(3-0)**

The course covers basic phenomena involved in biological systems, biochemical reaction systems, microbiology, and biological processes. Application of engineering methods to the design and control of biological systems. Biochemical production of industrial chemicals. Biological waste treatment. Immobilized enzyme technology. Corequisites: CHEN 400 and CHEN 350. **(DEMAND)**

**CHEN 608. Bioseparations** **Credits 3(3-0)**

The course is an introduction to the separation and purification of biochemicals. Separation processes are characterized as primarily removal of insolubles, isolation of products, purification or polishing. Processes covered include filtration, centrifugation, cell disruption, extraction, absorption, elution chromatography, precipitation, ultrafiltration, electrophoresis and crystallization. Students are required to complete a design project on a bioseparation process. Prerequisite: CHEN 400 **(DEMAND)**

**CHEN 615. Fuels and Petrochemicals** **Credits 3(3-0)**

Topics important to the production of fuels are covered. Topics include extraction and processing of fossil fuels, synfuels, and fuels from renewable resources. Topics also include distillation, refining, fermentation, catalytic reactions, and removal of undesirable by-products. The design of fuel processes includes emphasis on economic and environmental impact. Prerequisite: Senior or graduate standing in CHEN courses. **(DEMAND)**

**CHEN 618. Air Pollution Control** **Credits 3(3-0)**

The economic, social and health implications of air pollution and its control are covered. To understand the problems better, the sources, types and characteristics of man-made air pollutants will be discussed. The course will review some of the main regulations and engineering alternatives for achieving different levels of control. An air pollution control system will be designed. Prerequisite: Senior or graduate standing in CHEN courses. **(DEMAND)**



**CHEN 620. Advanced Chemical Engineering Analysis****Credits 3(3-0)**

Solution of chemical engineering problems by advanced mathematical techniques. Solution of uncoupled and coupled momentum, heat and mass transfer problems. Solution of linearized dynamic equations representing staged operations by matrix analysis. Advanced design and optimization of chemical processes. Prerequisite: Senior or graduate standing in CHEN courses. (F)

**CHEN 622. Pollution Prevention****Credits 3(3-0)**

The concept of pollution prevention and its application through industrial ecology, risk assessment and life-cycle assessment methodologies are covered. Topics include pollution prevention at the macroscale (industrial sector), mesoscale (unit operations), and microscale (molecular interactions). A process involving membrane separation steps will be designed and analyzed. Senior or Graduate Standing in Engineering. (DEMAND)

**CHEN 625. Basic Food Process Engineering****Credits 3(3-0)**

This course covers basic food processing topics including food preparation operations. Topics included are slurry flow, processing operations, microbiology and health hazards, diseases and medicines, and their effects on humans. Prerequisite: Senior or graduate standing in CHEN courses. (DEMAND)

**CHEN 630. Transport Phenomena I****Credits 3(3-0)**

A unified approach to momentum, energy, and mass transfer with emphasis on the microscopic approach. Development of the differential transport balances. Applications in solving simple chemical process problems. Prerequisite: Senior or graduate standing in CHEN courses. (F)

**CHEN 635. Mixing Processes and Equipment Scale-up****Credits 3(3-0)**

The course covers practical design concepts of mixing and multi phase processing in agitated tanks. Strategies for increasing plant throughput, improving contacting and mixing and selecting equipment will be given. This course provides information on: 1) judging the level of difficulty of a mixing process; 2) using practical elements of laminar, transitional and turbulent mixing; 3) mixing times and 4) increasing throughput for all types of systems and power. The course treats jet mixing, gas sparged mixing and mechanical mixing. The course provides basic concepts on using pilot plant studies for process translation and scale-up. Equipment design is stressed. Prerequisite: Senior or graduate standing in CHEN courses. (S)

**CHEN 640. Computer-Aided Chemical Process Design****Credits 3(3-0)**

The development and use of computer-aided models for process equipment design is stressed. Model results are compared with the ASPEN PLUS simulation package. Students study the Interrelationships between design and process variables using computer simulation. Optimization methods are applied to chemical process design. Prerequisite: Senior standing in CHEN courses. (DEMAND)

**CHEN 645. Environmental Remediation****Credits 3(3-0)**

The course introduces students to traditional and developmental methods for removal and detoxification of hazardous wastes at contaminated sites and from industrial waste streams. Chemical, thermal, biological and physical methods of remediation are covered. The course deals with hazardous wastes in soils, groundwater, surface water, wastewater ponds and tanks. The emphasis is on destruction, removal and containment methods using mathematical models for contaminate fate and transport. Recent advances in emerging technologies are also discussed. Each student will complete an environmental remediation design project. Prerequisite: Senior or graduate standing in CHEN courses. (DEMAND)

**CHEN 660. Selected Topics in Chemical Engineering****Credit Variable (1-3)**

Topics covered include selected chemical engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Prerequisite: Consent of instructor. (F;S)

**CHEN 665. Introduction to Polymer Science & Engineering** Credits 3(3-0)  
This course is an introduction to the fundamentals of polymer science and engineering. Topics included are polymerization reaction mechanisms and kinetics, molecular weight distribution and measurement methods, crystallinity, morphology and phase transitions, structure-property relationships, solution properties and melt rheology. Commonly used polymer characterization techniques will be introduced. Industrial examples will be emphasized. Prerequisite: Senior standing in Chemical Engineering or permission of instructor. (DEMAND)

**CHEN 666. Special Projects in Chemical Engineering** Credit Variable (1-3)  
Study is arranged on a special chemical engineering topic of interest to both the student and faculty member, who will act as supervisor. Topics may be analytical and/or experimental and should encourage independent study. Prerequisite: Consent of instructor. (F;S)

**CHEN 670. Solids Processing and Particle Technology** Credits 3(3-0)  
This course is an introduction to the fundamentals of solids processing and particle technology. Topics included are properties of particles, transport of particles, size reduction, size enlargement, filtration, centrifugation, clarification, drying of solids, crystallization, flotation, and safety hazards of fine powders. Industrial examples will be emphasized. Prerequisite: Senior standing in Chemical Engineering or permission of instructor. (DEMAND)

### **Mechanical Engineering (Undergraduate)**

**MEEN 210. Numerical Methods in Mechanical Engineering** Credit 3(3-0)  
This course introduces contemporary analytical and simulation tools in mechanical engineering. It includes numerical methods in differentiation, interpolation, and root-finding, and linear algebra topics including matrix manipulation, and solution of linear simultaneous equations. Statistical tools and packages are also included. Prerequisites: GEEN 103 and MATH 131. (F;S)

**MEEN 220. Mechanical Engineering Tools** Credits 2(0-4)  
This is a laboratory course, which deals with machine anatomy, principles of operation of machines and computer-aided design of machine components. Topics are drawn from mechanical and thermal systems: GEEN 103. (F;S)

**MEEN 260. Materials Science** Credit 2(2-0)  
This is a basic course in materials science that covers the fundamental nature of materials including their physical, mechanical and chemical characteristics. Topics include: atomic arrangements and atomic bonding; phase diagrams; engineering properties; and selection of materials for specific applications. Prerequisite: CHEM 106. (F;S;SS)

**MEEN 300. Mechanical Engineering Lab I** Credit 2(0-4)  
This is the first in the sequence of three mechanical engineering laboratory courses, and it provides an introduction to uncertainty in experimental measurements, experiments, and analysis in engineering mechanics, materials science and engineering. This course includes experiments in materials properties, strength, and microstructure. Prerequisites: PHYS 251, MEEN 210, and 220; Corequisites: MEEN 336. (F;S)

**MEEN 313. Statics and Mechanics of Materials** Credit 3(3-0)  
This is an introductory course in statics and mechanics of materials for non-mechanical engineering majors. It provides a just-in-time approach to the study of characteristics of forces and couples, and their effects on equilibrium, strains, and stresses in solid bodies. Relationships between loads and deformations are also presented. The course is designed to help prepare students for the Fundamentals of Engineering Exam. Prerequisites: PHYS 241 and MATH 131. (F;S)

**MEEN 335. Mechanics I, Statics** Credit 3(3-0)  
This course covers the following: basic vector concepts of force, moment of a force; analytical and graphical techniques in the analysis of force and moment; conditions of equilibrium in

frames, trusses, machine members under static loads; laws of friction; distributed forces, determination of centroid, mass center, area and mass moment of inertia. Prerequisites: MATH 131 and PHYS 241. (F;S;SS)

**MEEN 336. Strength of Materials**

**Credit 3(3-0)**

This course covers the analysis of stress and strain; stress-strain relation; applications; torsional and flexural loadings; flexural deflections; combined loading; columns. Prerequisite: MEEN 335. (F;S;SS)

**MEEN 337. Mechanics II, Dynamics**

**Credit 3(3-0)**

This introductory course covers the motions of particles and rigid bodies and the forces that accompany or cause those motions. Topics include Newton's laws, the work and energy principle, and the impulse and momentum principle. The course includes the use of computational software to solve numerical problems. Prerequisites: MEEN 335 and MATH 231. (F;S;SS)

**MEEN 400. Mechanical Engineering Laboratory II**

**Credit 2(0-4)**

This is the second course in a sequence of three mechanical engineering laboratories. The course includes selected experiments in the area of mechanical systems. Topics include principles of measurement of force, displacement, and strain; process control; principles of sensors, transducers, and data acquisition; computer-aided design and manufacturing; and product inspection and testing. Prerequisite: MEEN 300. Corequisite: MEEN 440. (F;S)

**MEEN 413. Thermo-Fluid Sciences**

**Credit 3(3-0)**

This is an introductory course in the thermo-fluid sciences for non-mechanical engineering majors. The basic principles of fluid mechanics and thermodynamics are covered with an emphasis on problem solving techniques. The course is designed to help prepare students for the Fundamentals of Engineering Exam. Prerequisites: PHYS 242 and MATH 231. (F;S)

**MEEN 415. Aerodynamics**

**Credit 3(3-0)**

The course begins with the fundamentals of fluid statics and dynamics followed by an introduction to inviscid flow theory with applications to incompressible flows over airfoils, wings and flight vehicle configurations. Prerequisites: MATH 231 and MEEN 337. (DEMAND)

**MEEN 416. Fluid Mechanics**

**Credits 3(2-2)**

This course examines the static and dynamic behavior of fluids. Applications include fluid flow in pipes, flow past immersed bodies, motion of particles in fluids, and transportation and metering of fluids. Concepts covered include dimensional analysis and similitude. Design and safety aspects of piping networks, fluid flow and metering equipment are required. Prerequisites: MEEN 337, MATH 231, PHYS 242, and course equivalent to CHEN 300. (F;S;S)

**MEEN 422. Aero Vehicle Structures I**

**Credit 3(3-0)**

This course covers the determination of typical flight and landing loads and methods of analysis and design of aircraft structures to be able to withstand expected loads. Prerequisites: MEEN 336, MEEN 337, and MATH 331. (DEMAND)

**MEEN 440. System Dynamics**

**Credit 3(3-0)**

This course gives a treatment of dynamic systems composed of mechanical, electrical, thermal and fluid elements. General analytical and design tools for physical systems are developed. Topics include time response, frequency response, linearization, numerical analysis, and computer simulation. Projects are assigned to investigate the scope and limitations of the basic concepts. Prerequisites: MEEN 337, MATH 331, ELEN 200. (F;S)

**MEEN 441. Fundamentals of Thermodynamics**

**Credit 3(3-0)**

This is a basic course in fundamental thermodynamic principles. The topics covered include: energy, heat and work, thermodynamic properties of substances; real and ideal gases; and first and second laws of thermodynamics from a macroscopic viewpoint. Prerequisites: MATH 231, CHEM 106, and PHYS 242. (F;S;SS)



**MEEN 442. Applied Thermodynamics****Credit 3(3-0)**

This course involves applications of basic thermodynamic principles to real systems. The topics covered include gaseous mixtures, psychrometrics, combustion, power cycles and refrigeration cycles. Prerequisite: MEEN 441. (F;S)

**MEEN 446. Manufacturing Processes****Credit 3(3-0)**

The course deals with principles, analysis, and selection of manufacturing processes. Topics include casting, molding, forming, particulate processing, material removal and joining. Design for manufacturing and economics are introduced. Prerequisites: MEEN 460, 336, and INEN 260. (F;S)

**MEEN 460. Modern Engineering Materials****Credit 3(3-0)**

This course covers the role of materials in engineering; properties of materials; nonferrous and ferrous systems and applications; heat treatment and strengthening mechanisms; various polymeric, ceramic and composite materials and their applications; failure theories; project work involving selection and design with various material systems. Prerequisite: MEEN 260. (F;S)

**MEEN 474. Mechanical Engineering Design****Credit 3(3-0)**

This course provides an introduction to mechanical design. Emphasis is placed on the design of machine elements for static and fatigue strength. Other topics such as codes and standards, project planning and communication are also covered. Team design projects are assigned. Prerequisites: MEEN 300 and 336. (F;S)

**MEEN 500. Mechanical Engineering Laboratory III****Credit 2(0-4)**

This is the third course in a sequence of three mechanical engineering laboratories. The course includes selected experiments in the area of thermal and fluid systems. Topics include thermal properties, temperature, pressure, fluid flow, and heat transfer. Prerequisite: MEEN 400. Corequisite: MEEN 562. (F;S)

**MEEN 501. General Engineering Topics Review****Credits 1(0-3)**

The course covers and reviews the engineering topics normally covered in the General Engineering sections of the Fundamentals of Engineering Exam. The course emphasizes extensive problem solving and helps students prepare for the FE Exam. Prerequisite: Senior standing. (F;S)

**MEEN 544. Special Undergraduate Project****Variable Credit (1-3)**

This is a senior level project of interest to students. A faculty member will serve as a project advisor. Projects may include design, analysis, testing and/or experimental work. Prerequisites: Permission of department and faculty member as an advisor. (F;S)

**MEEN 562. Heat Transfer****Credits 3(2-2)**

The course covers the fundamentals of heat conduction, convection, radiation, boiling and condensation, and heat exchangers. Design and safety aspects of heat transfer equipment are required. Prerequisites: MATH 431; MEEN 415 or 416, 441, and course equivalent to CHEN 320. (F;S)

**MEEN 565. Computer-Aided Design of Machine Elements****Credit 3(3-0)**

This course covers the principles and current practices of machine element design, including solid modeling and finite element analysis. Prerequisites: MEEN 440 and 474. (F)

**MEEN 572. Mechanical Engineering Seminar****Credit 1(1-0)**

This weekly seminar course utilizes invited speakers to address such topics as résumé preparation, interviewing, ethics and professional registration, as-well-as technical topics presented by graduate students and faculty researchers. Prerequisite: Senior standing in MEEN. (F)

**MEEN 573. Mechanical Engineering Senior Project I****Credits 3(2-2)**

This is part one of the senior capstone design experience. Lectures include design methodologies, ethics, and professional practice. Team design projects begin in MEEN 573 and are con-



tinued during the following semester in MEEN 574. Oral and written reports are required. Prerequisites: MEEN 442 and 474. **(F)**

**MEEN 574. Mechanical Engineering Senior Project II** **Credit 3(0-6)**

This is part two of the senior capstone design experience. Work continues on the design project begun in MEEN 573. Written and oral progress and final design reports are required. Prerequisite: MEEN 573. **(S)**

**MEEN 576. Propulsion** **Credit 3(3-0)**

This introductory course to aero propulsion systems includes coverage of one-dimensional internal flow of compressible fluids, normal shock, flow with friction, and simple heat addition. The basic concepts are applied to air-breathing aircraft propulsion systems. Prerequisites: MEEN 415 or 416 and MEEN 441. **(DEMAND)**

**MEEN 577. Aerodynamics and Propulsion Laboratory** **Credit 1(0-2)**

This is a laboratory course, which provides experimental verification of concepts learned in MEEN 415 and MEEN 576. Experiments are performed that reinforce the concepts from the lecture courses including wind tunnel experiments and performance of a gas turbine engine. Prerequisite: MEEN 415. Corequisite: MEEN 576. **(DEMAND)**

**MEEN 578. Flight Vehicle Performance** **Credit 3(3-0)**

This course provides an introduction to the performance analysis of aircraft. Aircraft performance in gliding, climbing, level, and turning flight are analyzed as well as calculation of vehicle take off and landing distance, range and endurance. Prerequisites: MATH 231 and MEEN 337. **(DEMAND)**

**MEEN 580. Aerospace Vehicle Design** **Credit 3(2-2)**

This is the capstone design course for the aerospace option. This course requires the synthesis of knowledge acquired in previous courses and the application of this knowledge to the design of a practical aerospace vehicle system. Prerequisites: MEEN 422, 474, 576, 578 and ELEN 410. **(DEMAND)**

**MEEN 606. Mechanical Vibrations** **Credit 3(3-0)**

This is a course in modeling, analysis and simulation of free and forced vibrations of damped and undamped, single and multi-degree of freedom systems. Prerequisites: MEEN 440 and MATH 331. **(S)**

**MEEN 612. Modern Composite Materials** **Credit 3(3-0)**

Basic concepts of micromechanics and laminate theory are introduced. Strength and failure are studied and temperature and humidity effects are analyzed. Structural components are designed to replace isotropic materials with composites. Special emphasis is placed on developing a computer code for design of composite laminates. Prerequisites: MEEN 210 and MEEN 336 or equivalent. **(DEMAND)**

**MEEN 614. Mechanics of Engineering Modeling** **Credit 3(3-0)**

This course covers engineering modeling techniques; time dependent integration and simulation models of systems, and finite difference and finite element methods in mechanics. Prerequisites: MEEN 210, 336, and MATH 332 or equivalent. **(DEMAND)**

**MEEN 645. Aluminum Product Design and Manufacturing** **Credit 3(3-0)**

This course introduces students to the principles of product and manufacturing process design specifically applicable to aluminum-based materials. Material properties of aluminum are compared with those of other commercial materials. Raw material fabrication and product manufacturing processes are presented. The interactions between processes and material properties are described. Case studies are presented to guide the student in successful completion of design projects. Prerequisites: MEEN 260 and 474. **(DEMAND)**

**MEEN 646. Advanced Manufacturing Processes****Credit 3(3-0)**

This course includes an examination of the following: theory, application, and design considerations for forming and machining; machines and tooling in modern manufacturing processes; dimensional and tolerance analysis; and control of work piece and tool. Projects in the design of molds, dies, presses, jigs and fixtures and automated machinery are required. Prerequisites: MEEN 226 or equivalent, MEEN 474, and MATH 231. **(DEMAND)**

**MEEN 647. Computer Integrated Mechanism Design****Credit 3(3-0)**

This is a course in modern computer simulation tools and the underlying theories for synthesis and analysis of mechanical systems consisting of linkages, cams, and gears. Prerequisite: MEEN 440. **(S)**

**MEEN 650. Mechanical Properties and Structure of Solids****Credit 3(3-0)**

This course is an examination of the elastic and plastic behavior of matter in relation to its structure, both macroscopic and microscopic. Major representative classes of materials are thermoplastic materials, elastomers, glasses, ceramics, metals, and composites. Prerequisite: MEEN 560 or equivalent. **(DEMAND)**

**MEEN 651. Aero Vehicle Structures II****Credit 3(3-0)**

This course covers deflection of structures, indeterminate structures, fatigue analysis, and minimum weight design. Finite element methods and software are utilized. Prerequisite: MEEN 422. **(DEMAND)**

**MEEN 652. Aero Vehicle Stability and Control****Credit 3(3-0)**

This technical elective course covers longitudinal, directional and lateral static stability and control of aerospace vehicles. It also covers linearized dynamic analysis of the motion of a six degree-of-freedom flight vehicle in response to control inputs and disturbances through use of the transfer function concept, plus control of static and dynamic behavior by vehicle design (stability derivatives) and/or flight control systems. Prerequisites: MEEN 415, 422, and ELEN 410. **(DEMAND)**

**MEEN 653. Aero Vehicle Flight Dynamics****Credit 3(3-0)**

This technical elective course covers the basic dynamics of aerospace flight vehicles, including orbital mechanics, interplanetary and ballistic trajectories, powered flight maneuvers and spacecraft stabilization. Prerequisites: MATH 332, MEEN 337 and 422. **(DEMAND)**

**MEEN 654. Advanced Propulsion****Credit 3(3-0)**

This technical elective is a second course in propulsion. It covers the analysis and design of individual components and complete air-breathing propulsion systems including turbo fans, turbo jets, ram jets and chemical rockets. Prerequisite: MEEN 576. **(DEMAND)**

**MEEN 655. Computational Fluid Dynamics****Credit 3(3-0)**

This technical elective course provides an introduction to numerical methods for solving the exact equations of fluid dynamics. Finite difference methods are emphasized as applied to viscous and inviscid flows over bodies. Students are introduced to a modern Computational Fluid Dynamics computer code. Prerequisites: MATH 332; MEEN 415 or 416. **(DEMAND)**

**MEEN 656. Boundary Layer Theory****Credit 3(3-0)**

This course covers the fundamental laws governing flow of viscous fluids over solid boundaries. Exact and appropriate solutions are studied for various cases of boundary layer flow, including laminar, transitional and turbulent flows. Prerequisites: MEEN 415 or 416. **(DEMAND)**

**MEEN 657. Design of Thermal Systems****Credits 3(3-0)**

This is a course in the selection of components for fluid and energy processing systems to meet system performance requirements, computer-aided thermal design simulation and optimization

techniques and investment economics. Design projects are assigned to demonstrate application of these topics. Prerequisites: MEEN 562 and INEN 260. (S)

**MEEN 663. Energy Conversion Systems Design** **Credit 3(3-0)**

This course covers the design of steam power systems, internal combustion power systems, refrigeration and heat pump systems and an overview of direct energy conversion devices. Power system design projects are assigned. Prerequisites: MEEN 416 and 442. (S)

**MEEN 667. Environmental Control** **Credits 3(3-0)**

This course deals with the principles of heating and air conditioning and their applications to design of environmental control systems and determination of building heating and cooling loads; principal equipment layout and control are discussed for various types of systems. Prerequisites: MEEN 442 and 562. (DEMAND)

**MEEN 668. Gas Dynamics** **Credits 3(3-0)**

The course covers the principles of one-dimensional compressible fluid flow, normal shocks, and flow with friction, heating and cooling. Two-dimensional flows are introduced. Prerequisites: MEEN 415 or 416 and MEEN 441. (DEMAND)

**MEEN 670. Internal Combustion Engines** **Credit 3(3-0)**

This course deals with the fundamental principles of spark-ignition and compression ignition engines, combustion phenomena, the effect of fuel-air mixture, design of components of an internal combustion engine, and testing and performance curves. Design projects are assigned. Prerequisite: MEEN 442 (DEMAND)

**MEEN 671. Turbomachinery** **Credit 3(3-0)**

This course covers the application of the cascade method to turbomachines; impulse and reaction turbines; compressible fluid dynamics; gas turbine principles, pumps, compressors and blowers; and the design of turbine elements. Project work is assigned. Prerequisites: MEEN 415 or 416 and MEEN 442. (DEMAND)

**MEEN 675. Solar Energy Fundamentals and Design** **Credit 3(3-0)**

This course deals with the characterization of solar radiation at the earth's surface. Solar collectors of both flat and concentrating types, and storage and distribution systems are discussed and analyzed. System sizing, design and economic analysis for space heating, water heating and industrial process are covered. Prerequisite: MEEN 562. (DEMAND)

**DIRECTORY OF FACULTY**

**Yusuf G. Adewuyi** ..... **Professor**

B.S., Ohio University; M.S., Ph.D., University of Iowa

**V. Sarma Avva** ..... **Professor Emeritus**

B.S., Saugor University; DMIT, Madras Institute of Technology; M.S., Oklahoma State University; Ph.D., Pennsylvania State University

**Suresh Chandra** ..... **Research Professor**

B.S., Allahabad University; B.Sc., Banaras Hindu University; M.S, University of Louisville; Ph.D., Colorado State University

**Rajinder S. Chauhan** ..... **Associate Professor**

B.S., Guru Nanak Engineering College; MT Indian Institute of Technology; Ph.D., Auburn University

**William J. Craft** ..... **National Institute of Aerospace Liaison Professor**

B.S., North Carolina State University; M.S., Ph.D., Clemson University; Professional Engineer



- DeRome O. Dunn** ..... **Associate Professor**  
B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Frederick Ferguson** ..... **Associate Professor and Director, CAR Center**  
M.S., Kharkov State University; Ph.D., University of Maryland
- George J. Filatovs** ..... **Professor**  
B.S., Washington University at St. Louis; Ph D., University of Missouri at Rolla
- Meldon Human** ..... **Professor**  
B.S., Northwestern University; M.S., Ph.D., Stanford University; Professional Engineer
- Shamsuddin Ilias.** ..... **Professor**  
B.S., Bangladesh University of Engineering and Technology, Dhaka; M.S., University of Petroleum and Minerals; Ph.D., Queen's University, Canada; Professional Engineer
- Vinayak N. Kabadi** ..... **Professor**  
B.S., Bombay University; M.S., State University of New York; Ph.D., Pennsylvania State University
- Ajit D. Kelkar** ..... **Professor**  
B.S., Poona University; M.S., South Dakota State University; Ph.D., Old Dominion University
- Franklin G. King** ..... **Professor**  
B.S., Pennsylvania State University; M.S., Kansas State University; M.Ed., Howard University; D.Sc., Stevens Institute of Technology
- David E. Klett** ..... **Ford Professor**  
B.S., Michigan State University; M.S., Ph.D., University of Florida; Professional Engineer
- Jianzhong Lou** ..... **Associate Professor**  
B.S., M.S., Zhejiang Institute of Technology; M.S., Ph.D., University of Utah
- Carolyn W. Meyers** ..... **Professor and University Provost**  
B.S., Howard University; M.S., Ph.D., Georgia Institute of Technology
- Tony C. Min** ..... **Professor Emeritus**  
B.S., Chiao Tung University-Shanghai; M.S., Ph.D., University of Tennessee; Professional Engineer
- Samuel R Owusu-Ofori** ..... **Boeing Professor**  
B.S., University of Science and Technology-Kumasi, Ghana; M.S., Bradley University; Ph.D., University of Wisconsin-Madison; Professional Engineer
- Devdas M. Pai** ..... **Associate Professor**  
B.S., Indian Institute of Technology; M.S., Ph.D., Arizona State University; Professional Engineer
- Kenneth L. Roberts** ..... **Assistant Professor**  
B.S., M.S., Georgia Tech; Ph.D., University of South Carolina
- Jagannathan Sankar** ..... **Professor and Director CAMSS Center**  
B.E., University of Madras; M.E., Concordia University, Ph.D., Lehigh University
- Keith Schimmel.** ... **Associate Professor and Chemical Engineering Program Director**  
B.S., Purdue University; M.S., Ph.D., Northwestern University; Professional Engineer



**Kunigal N. Shivakumar** ..... **Research Professor and Director, CCMR Center**  
 B.E., Bangalore University; M.E., Ph.D., Indian Institute of Science

**Gary B. Tatterson.** ..... **Professor**  
 B.S., University of Pittsburgh; M.S., Ph.D., Ohio State University; Professional Engineer

**Leonard C. Uitenham.** ..... **Professor and Chairperson**  
 B.S., M.S., Ph.D., Case Western Reserve University

**Shih-Liang Wang** ..... **Professor and Mechanical Engineering Program Director**  
 B.S., National Tsing Hua University; M.S., Ph.D., Ohio State University; Professional Engineer

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## SCHOOL OF NURSING

<http://www.ncat.edu/~nursing.htm/>

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### Patricia Price Lea, Dean

The School of Nursing offers a program leading to the Bachelor of Science Degree in nursing. The school is organized into lower and upper divisions. The first two academic years or lower division of the program encompasses the core requirements of the University and the foundation courses for the major. The upper division or last two academic years are largely devoted to nursing courses.

### MISSION STATEMENT FOR SCHOOL OF NURSING

The School of Nursing will continuously improve an environment of academic excellence, scholarly inquiry and civility to prepare nurses for entry into professional practice through advanced technology, clinical experiential learning and diverse community involvement.

### CURRICULUM PURPOSE

The purpose of the baccalaureate program in nursing at North Carolina Agricultural and Technical State University is to prepare a nurse generalist for beginning professional practice. A special emphasis is the preparation of minority nurses. The program provides a body of knowledge derived from liberal arts, biological, physical, behavioral sciences and nursing. The program provides the foundation for advanced preparation in nursing and life-long learning. The graduate will contribute to the advancement of the nursing profession through the use of research and management skills.

### PHILOSOPHY OF THE SCHOOL OF NURSING

The philosophy of the School of Nursing depicts a holistic system that conceptually involves human beings, the environment, health, the healthcare system, professional nursing, and baccalaureate nursing education.

We view **human beings** as unique, biopsychosocial spiritual individuals who have worth and value. A synergistic relationship exists between the individual and the environment. Human beings have unlimited potential and possibilities, although their abilities may be restricted. Human beings have the potential to adapt to internal and external stimuli, and to create change in themselves and the world. Human beings are holistic, diverse and have the potential for growth and maturity. They vary in their capacity to learn, assume responsibility for their behavior, and in their ability to participate in health care activities.

We believe **the environment** consists of internal and external conditions, circumstances, and influences affecting individuals, families, groups, and communities. Human beings respond to environmental stimuli and those responses are exhibited as adaptive modes.

We believe that **health** is a dynamic state of wholeness, affected by internal and external environments and is influenced by individual and cultural beliefs. Healing is the process of moving toward a higher level of wellness.

We believe **the healthcare system** is a diverse, interrelated entity that is constantly changing with the advent of technological and health-promoting discoveries. The system has political and socioeconomic elements in addition to the variety of health-care settings, the various providers, and the culturally diverse population who are served. Health care is a right for all,

and human beings should have access to resources that promote, maintain, and restore health, and prevent illness. The health system requires that the nurse engage in critical reflection and ethical deliberation.

We believe that **professional nursing** is an art and a science. It is a changing, interactive practice discipline and is based on the synthesis of liberal education, scientific and professional knowledge, clinical and cognitive skills, and the value system of the nurse. Nurses engage in a healing relationship with human beings. They assume the roles of learner, practitioner, teacher, collaborator, leader, manager, and client advocate. The professional nurse designs and provides interventions for individuals, families, and communities. The nursing process is the systematic method used to direct nursing care and make clinical judgments in a variety of settings. Steps in the nursing process are assessment, analysis, planning, implementation, and evaluation.

We believe research expands the theoretical and practice basis of nursing as it continues to emerge as a profession. Nursing research is the application of scientific methods to the study of client problems that can be resolved through nursing intervention. We further believe that the baccalaureate graduate in nursing is prepared to critique and use research in professional practice.

We believe the professional nurse is prepared to assume a leadership role in community as well as professional life. The professional nurse demonstrates leadership through advocacy, interdisciplinary collaboration, and active participation in professional organizations and the community.

We believe the baccalaureate degree is the first professional degree in nursing, which prepares the nurse for entry into practice. Baccalaureate nursing education is a synthesis of learning from the liberal arts, sciences, and nursing. Baccalaureate education provides a foundation where the student finds a sense of identification, belonging, responsibility, and achievement in preparation for roles of leadership and service. Baccalaureate education encourages synthesis of knowledge and the effective use of analytical and communications skills. The body of knowledge for nursing is derived from nursing theories, research, and clinical practice. Baccalaureate nursing education provides a base for the understanding of human beings, the cultivation of intellectual and technological skills, the examination of the learner's values and beliefs, and the understanding of and respect for the values of others in a multicultural society. We believe that teaching and learning is an interactive process that occurs in a variety of settings. This process involves cognitive, psychomotor, and affective domains of learning. Students learn in a variety of ways and learning takes place best when students are actively involved in the process and share responsibility for the learning. The curriculum employs flexible approaches to meet the needs of learners. Baccalaureate education provides the student with a relevant knowledge base along with clinical and professional skills that provide a basis for clinical judgment. Baccalaureate nursing education provides the basis for graduate preparation in nursing and establishes a foundation for life-long learning.

### **PROGRAM OBJECTIVES**

The following objectives of the Nursing Program at North Carolina Agricultural and Technical State University are designed to provide learning experiences that will assist nursing students to:

1. Assimilate knowledge from the physical, biological, psychosocial, the liberal arts, nursing theories, and particularly Roy's adaptation model, as a foundation to provide nursing care to clients in a variety of settings.
2. Utilize the nursing process with skills of critical thinking to assist clients in achieving adaptation.
3. Utilize nursing theories and related research findings to enhance professional nursing practice.
4. Develop leadership and management abilities in the practice of professional nursing and in effecting change.
5. Assume the role of client advocate, teacher, facilitator, collaborator, and coordinator with other health care professionals and consumers to improve delivery of health care to meet the health needs of society.
6. Assume responsibility and accountability for professional nursing actions, their outcomes and for enhancing professional nursing practice.
7. Demonstrate personal and professional growth as individuals and citizens.
8. Develop professional values, ethical, moral, legal and political aspects of the practice of nursing.
9. Develop technological skills to assist learning, to deliver and document patient care, and to provide professional nursing services.

### **ACCREDITATION AND MEMBERSHIPS**

The program offered by the School of Nursing is approved by the North Carolina Board of Nursing, 3724 National Dr., Koger Center Office Complex, Camden Building, Suite 201, Raleigh, NC 27612, (919) 782-3211, [www.ncbon.com](http://www.ncbon.com); email@ncbon.com. The School of Nursing is accredited by the National League for Nursing Accrediting Commission (NLNAC) Baccalaureate and Higher Degree Programs in Nursing, 61 Broadway, New York, NY 10006, (800) 669-1656, [www.nac.org](http://www.nac.org)

The School of Nursing is an agency member of the National League for Nursing (NLN), the American Association of Colleges of Nursing, and the Southern Regional Education Board Council on Collegiate Education for Nursing. The School of Nursing is a member of Sigma Theta Tau International Nursing Honor Society.

### **GENERAL PROGRAM REQUIREMENTS**

All School of Nursing policies supersede University policy. Pre-nursing majors are required to purchase Lab coats, emblems, and nametags for the spring semester of the sophomore year. Students are required to secure liability insurance prior to starting NURS 351 and purchase this insurance annually thereafter through the School of Nursing. Proof of tuberculosis skin test, other immunizations, and CPR certification must be submitted annually. If the information is not completed or submitted by the deadlines, students will not be allowed to participate in clinical nursing. If students pre-registered, their courses will be dropped. Attendance in all clinicals is mandatory. Students are responsible for transportation to clinical agencies, which may be outside of the Greensboro area.

The School of Nursing believes that the professional development of a nursing student is essential. Based on this belief, students are required to be in attendance for Founder's Day, Honors Convocation, Capping and Pinning, Sigma Theta Tau activities and other events



designated by the dean as related to the professional nature of nursing. A total of 124 credit hours are required for graduation with a Bachelor of Science in Nursing degree (62 credit hours of nursing courses and 62 credit hours of non-nursing courses). A minimum of 36 credit hours must be earned at North Carolina Agricultural and Technical State University. Graduates of the nursing program are eligible to apply to take the National Council of State Boards of Nursing Licensure Examination for Registered Nurses (NCLEX-RN).

## DEPARTMENTAL REQUIREMENTS

### I. Admission Criteria for Pre-Nursing Majors

*Freshmen and transfer students admitted into the university, as pre-nursing majors must meet the following criteria:* (Licensed nurses see Section III).

- A. In-state students must have a combined Scholastic Aptitude Test (SAT) score of "800" or a cumulative grade point average of "B" or better. Out-of-state students must have a combined (SAT) score of 920 and achieved cumulative grade point average of "B" or better.
- B. If criterion A above is not met, a student may enter the University as "Undecided". If a student completes his or her first year with a cumulative grade point average of **2.6**, the student may be admitted as a pre-nursing major.

*Students must complete Biological Science 100, Chemistry 104, and 114 with a minimum grade of "C" before enrolling in sophomore level nursing courses. Prior to enrolling in NURS 350 or 351 students must have completed BIOL 369 with a grade of "C" or better.*

*Transfer students admitted into the university, as pre-nursing majors must meet the following criteria:*

1. Overall cumulative grade point average of 2.6 or above from transfer institution.
2. Completion of the following courses with a grade of "C" or better;  
CHEM 104, 114 (4)      BIOL 100 (4)      MATH 101, 102 (6)  
ENGL 100, 101 (6), or;
3. Nursing courses 5 years or older will not be accepted for transfer.

If criteria A or B are not met, a student may enter the university as an "Undecided" major and enroll in all first year courses of the nursing curriculum. If all courses are completed with a cumulative GPA of 2.6, the student may be admitted as a nursing major.

### II. Admission into the Nursing Major (Upper Division)

Students are formally admitted into the School of Nursing at the junior level. Admission to the University does not guarantee acceptance in the nursing major. Admission into the School of Nursing is contingent upon the availability of space. Health agencies in the Piedmont and surrounding counties work collaboratively with the School of Nursing to provide clinical learning experiences for students. The availability of clinical resources as well as the School of Nursing resources determines the size of the junior class. Therefore, it is impossible to assure clinical availability for every student who meets the admission criteria.

**Students must meet the following criteria to be considered for admission into the nursing major:**

### III. Admission Criteria for Licensed Registered Nurse and Licensed Practical/Vocational Nursing Students

- A. Registered nurses who meet criteria for admission to the University are accepted as pre-nursing transfer students. Presentation of a current unrestricted North Carolina license is required for licensed nurses admitted as majors into the nursing program. Requirements for all courses in the nursing curriculum may be met by challenge examination, completion of course work or transfer of credit. Registered and Licensed Practical/Vocational nurse students must follow the progression requirements and meet the graduation requirements.

### IV. Progression Requirements

1. Courses in the nursing major must be completed in the sequence of the designed curriculum.
2. All science courses required in the nursing major must be completed with achievement of 2.0 "C" grade point for each.
3. Each nursing course must be completed with a grade "C" (77).
4. A student failing a nursing course, determined by faculty to be clinically unsafe, or received a grade of "D" or "F" in a nursing course will be given the privilege to return to the upper-division the following academic year. This privilege may be used one time.
5. A student earning a grade of "D," "F," or "WF" the second time the course is taken will be unable to enroll in nursing courses.

### V. Readmission Requirements

Eligibility for consideration of readmission to the nursing major is dependent upon space availability and adherence to current School of Nursing requirements. The student who seeks readmission to the upper-division nursing program must adhere to the following requirements:

1. Notify the Academic Coordinator and the Admissions, and Progression Committee of the School of Nursing in writing of the intent to return to the upper division four months prior to their return.
2. Meet with assigned academic advisor four months prior to the appropriate academic semester to complete all readmission requirements.

## **CAREER OPPORTUNITIES**

The Bachelor of Science in Nursing degree, when accompanied by nursing licensure, prepares the graduate for beginning practice in a variety of health care settings. Some possible opportunities include institutions such as hospitals, public health agencies, clinics, military services, home health, and extended care facilities.

## **POLICY REGARDING PHYSICAL OR EMOTIONAL HEALTH**

Students seeking admission to the University must have a physical examination before enrollment. Students seeking admission into the sophomore level of nursing must have a pre-entrance physical examination, required immunizations and CPR certification, which must include a mental health assessment.

The School of Nursing reserves the right to dismiss a student from the program who (1) presents with problems in physical or emotional health which does not respond to appropriate treatment and/or counseling within a reasonable period of time and (2) demonstrates behavior which conflicts with safety essential to nursing. Students who are dismissed will be accorded due process.

## REQUIRED MAJOR COURSES FOR NURSING

NURS 100	NURS 202	NURS 300
NURS 320	NURS 350	NURS 351
NURS 390 (RN/BSN only)	NURS 400	NURS 401
NURS 410	NURS 411	NURS 412
NURS 413	NURS 500	NURS 501
NURS 510	NURS 511	NURS 512
NURS 513	NURS 518	NURS 520
NURS 524		

*A grade of 77% must be earned in all of the above requirements.*

## CURRICULUM GUIDE FOR NURSING

(Option: Generic)

### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 101	3	MATH 102	3
ENGL 100	3	ENGL 101	3
BIOL 100	3	HIST 100	3
NURS 100	1	CHEM 104	3
SPCH 250	3	CHEM 114	1
PHED <sup>2</sup>	<u>1</u>	PHED <sup>2</sup>	1
	15	NURS 202	<u>2</u>
			16

### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 220	4	BIOL 370	3
Humanities <sup>3</sup>	3	HEFS 310	3
SOCI 100	3	PSYC 320	3
BIOL 369	3	NURS 350	2
NURS 300	<u>3</u>	NURS 351	2
	16	NURS 320	<u>2</u>
			15

### JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HEFS 337	3	Humanities <sup>3</sup>	3
PSYC 434	3	NURS 410	4
NURS 400	5	NURS 411	2
NURS 401	<u>5</u>	NURS 412	3
	16	NURS 413	<u>3</u>
			15

### SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
NURS 500	6	NURS 510	3
NURS 501	4	NURS 511	3
NURS 513	3	NURS 512	2
NURS 520	2	NURS 518	3
Elective <sup>4</sup>	<u>3</u>	NURS 524	<u>2</u>
	18		13

Total Credit Hours: 124

<sup>1</sup> Any history course may be taken.

<sup>2</sup> A total of two credit hours of physical education are required.

<sup>3</sup> Humanities include courses in literature, music, art, theater, foreign language and religion. A three-hour course of African-American Studies and a three-hour course of Global Studies are required.

<sup>4</sup> Statistics or foreign language (preferably Spanish) is strongly recommended.

## RN-BSN PROGRAM GENERAL INFORMATION

The goal of the RN Option program is to provide the registered nurse student an opportunity to obtain a Bachelor of Science in Nursing degree. The program is designed to graduate nurses who will function in a variety of settings, provide leadership with good managerial skills, use applied research, and be prepared for graduate nursing education.

A total of 124 semester hours of credit are required for graduation. The same admission and progression criteria for the generic student apply to the RN student.

### CREDIT BY EXAMINATION RN STUDENTS

The registered nurse student can receive credit by examination for the following courses:

I. General education courses (CLEP exam) (15 credit hours).

62 credit hours of the general education requirements may be taken at NC A&T or transferred to the University. However, no more than 80 credit hours may be transferred from another institution.

II. The School of Nursing awards the enrolled RN student 42 credit hours for previous RN Licensure upon successful completion of the NLN Comprehensive Nursing Achievement Examination. Knowledge and skills are validated through course work in the BSN completion program.

**The NLN Comprehensive Nursing Achievement Examination gives credit for the following:**

<u>Courses</u>		<u>Credit Hours</u>
Foundations of Nursing	NURS 300, 350, 351	7
Care of the Adult Client	NURS 400, 401, 410, 411	16
Care of the Client with Mental Disorder	NURS 412, 413	6
Care of the Child, Care of the Child-Bearing Family	NURS 500, 501	10
Integration and Application of Nursing Practice	NURS 518	<u>3</u>
		42

III. An approved Health Assessment Course is equivalent to: NURS 320 (2)

NURS 390 may be offered in fall or spring semesters. A foreign language and a statistics course are suggested electives for those planning to go to graduate school.

## CURRICULUM GUIDE FOR NURSING

### (Option: Registered Nurse)

#### FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 101	3	MATH 102	3
ENGL 100	3	ENGL 101	3
BIOL 100	4	HIST (100)	3
SPCH 250	3	CHEM 104	3
PHED (2)	<u>1</u>	CHEM 114	1
	14	PHED (2)	<u>1</u>
			14

#### SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 220	4	BIOL 370	3
SOCI 100	3	HEFS 310	3
BIOL 369	3	PSYC 320	3
Humanities	<u>3</u>	NURS 390 (RN) (3)	<u>3</u>
	13		12



## JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PSYC 434	3	Humanities	<u>3</u>
HEFS 337	<u>3</u>		3
	6		

## SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
NURS 520	2	NURS 510	3
Elective	3	NURS 511	3
NURS 513	<u>3</u>	NURS 512	2
	8	NURS 524	<u>2</u>
			10

Total Credit Hours: 124

IV. A total of two credit hours of physical education is required.

V. African American and Global Studies requirements (3 credits each course).

42 or 44 credit hours may be gained by challenge examinations

Credit Hours: 80 or 82

## LICENSED PRACTICAL NURSE (LPN) GENERAL INFORMATION

The LPN program provides an opportunity for the student to complete the educational requirements for a Baccalaureate of Science in Nursing degree in a flexible, supportive environment. LPNs are admitted to the University as transfer students. Individualized counseling for course selection is provided prior to admission. The overall goal of the LPN program option is to graduate nurses who will function in a variety of settings, provide leadership with good managerial skills, use applied research, and be prepared for graduate nursing education.

## CREDIT BY EXAMINATION

### LPN Students

LPNs can receive credit by examination for the following:

I. General Education Courses (Clep Exam) (15 Credit Hours).

II. NLN Challenge Examinations:

Foundations of Nursing Equivalent to:

NURS 300 (3)

NURS 350 (2)

NURS 351 (2)

III. An approved Health Assessment Course is equivalent to:

NURS 320 (2).

A total of nine (9) nursing credit hours may be earned.

## COURSE DESCRIPTIONS IN NURSING

### NURS 100. Nursing Orientation

**Credit 1(1-0)**

This course provides an overview of the University and School of Nursing. Emphasis is on strategies for academic success and personal adjustment through the use of supportive services. An introduction to the nursing profession, its concepts, issues, opportunities, and challenges are explored. (F;SS)

**NURS 202. Nursing Interactive Processes****Credit 2(1-2)**

This course is designed to present a broad range of interactive processes: intrapersonal, interpersonal, or interactions between the self and others, as well as the interactive processes between professional nursing and the present health care arena. It is designed to increase one's understanding of him or herself, the interplay of the self and others, and processes basic to all groups. The nurse's role and personal power to influence colleagues, families, work groups, organizations, and formal and informal groups will be examined. (S;SS)

**NURS 300. Perspectives of Professional Nursing I****Credit 3(2-2)**

The focus of this course is on the identification of man's physiological safety and psychosocial needs. The nursing process is introduced, as a problem-solving method in meeting basic needs of man. The course also introduces various concepts of professional nursing. Concepts stressed are communication, health care delivery, nursing roles, moral, ethical and legal issues. The laboratory component involves practice of psychomotor skills in a simulated setting. Prerequisites: NURS 100 and 202. (F)

**NURS 320. Health Assessment****Credit 2(1-2)**

This course is designed to focus on health assessment with an emphasis on the concepts of health promotion and health maintenance. Opportunities will be provided for client-centered interviews, history taking and the development of physical assessment skills in a laboratory setting. Prerequisite: NURS 300. (S)

**NURS 350. Perspectives of Professional Nursing II****Credit 2(2-0)**

This course provides further exploration of the nursing process as the methodology used to provide patient care across the life span. Course content includes, but is not limited to, life span development, pharmacology, stress, adaptation, and teaching learning. Prerequisite: NURS 300 and BIOL 369. Corequisite: NURS 320 and 351. (S)

**NURS 351. Perspectives of Professional Nursing II Practicum****Credit 2(0-5)**

This practicum course allows students to acquire and apply basic selected nursing skills. Practice occurs in an on-campus laboratory and in selected health care settings. Critical thinking is used to provide patient care; application of the nursing process is observed. Prerequisites: NURS 300 and BIOL 369. Corequisite: NURS 320 and 350. (S)

**NURS 390. Transition Into Baccalaureate Nursing****Credit 3(3-0)**

This course is designed to facilitate the transition of the registered nurse student into the baccalaureate nursing program. The philosophy, objectives and policies of the University and School of Nursing are discussed. The broad range of interactive processes and the nursing process are foci of the course. Prerequisite: Admission as a RN/BSN completion student. (F;S)

**NURS 400. Nursing Care of Adults I****Credit 5(5-0)**

This course is designed to study adaptation problems of the adult client. Emphasis is on the interrelationship of self-concept, interdependence, physiological and role function modes of adaptation. The nursing process is utilized to design the plan of care. Prerequisites: Admission to the upper division of nursing. Corequisite: NURS 401. (F)

**NURS 401. Nursing Care of Adults I Practicum****Credit 5(0-14)**

This is a nursing practicum course with emphasis on the care of the adult client. The focus is on the application of the nursing process in providing nursing care. The laboratory component is designed to provide practice of psychomotor skills related to nursing care. Prerequisites: Admission to the upper division of nursing. Corequisite: NURS 400. (F)

**NURS 405. Pharmacology in Nursing****Credit 3(3-0)**

This is a pharmacology course emphasizing nursing implications of the therapeutic use of drugs. The course is designed to expand the students' knowledge of the classifications and

interactions of medications that are given to clients across the life span utilizing the nursing process. Prerequisites: BIOL 369, 370, CHEM 104 and 114. (F;S)

**NURS 410. Nursing Care of Adults II**

**Credit 4(4-0)**

The focus of this course is the continuation of the acquisition of knowledge related to care of adult clients with complex health problems of adaptation. The nursing process is utilized to design the plan of care. Prerequisites: NURS 400 and 401. Corequisite: NURS 411. (S)

**NURS 411. Nursing Care of Adults II Practicum**

**Credit 2(0-6)**

This is a nursing practice course with emphasis on providing care to adults with complex problems of adaptation. The nursing process is used as the methodology for client care. Prerequisites: NURS 400 and 401. Corequisite: 401. (S)

**NURS 412. Psychiatric Mental Health Nursing**

**Credit 3(3-0)**

This course provides an introduction to essential psychiatric nursing care for individuals experiencing acute and/or persistent mental illness across their life span. The nursing process is used as a method to assist clients with mental illness to adapt to responses across the health-illness continuum. Therapeutic relationships and communication skills are utilized in community and inpatient settings. Prerequisite: NURS 400. Corequisite: NURS 412. (S)

**NURS 413. Psychiatric Mental Health Nursing**

**Credit 3(0-8)**

Clinical activities in psychiatric and community agencies are linked to communication effectiveness. This lab component assists students in communication skill development, analysis and enhancement. This lab component is designed to provide supplemental experiences for students enrolled in N-413 clinical courses. The nursing process is applied to assist individuals and groups in achieving an optimum level of adaptation to internal and external environmental stimuli. Prerequisite: NURS 400 and 401. Corequisite: NURS 412. (S)

**NURS 500. Nursing Care of the Childbearing Family**

**Credit 6(6-0)**

This course focuses on the study of concepts and theories essential in providing nursing care to childbearing families, infants and children. Incorporated into the course are methods of adaptation to the physiological and psychosocial stressors inherent in this group of clients. The student assists with health promotion, maintenance and restoration activities for families in various developmental stages. Prerequisites: NURS 410 and 412. Corequisite: NURS 501. (F;S)

**NURS 501. Nursing Care of the Childbearing Family Practicum**

**Credit 4(0-12)**

This is a nursing practice course with emphasis on providing nursing care to selected childbearing and pediatric clients. Opportunities are provided for the learner to apply the nursing process to enhance normal growth and development, and maintain health in acute and ambulatory settings. Prerequisites: NURS 410 and 412. Corequisite: NURS 500. (F;S)

**NURS 510. Community Health Nursing**

**Credit 3(3-0)**

This course focuses on the care of clients experiencing health problems as individuals, families, groups and communities. Emphasis is on the utilization of the nursing process in promoting, maintaining, and restoring health. The epidemiological approach is introduced as a methodology for the study of populations and high-risk groups in various settings. Prerequisites: NURS 410 and 412. Corequisite: NURS 511. (F;S)

**NURS 511. Community Health Nursing Practice**

**Credit 3(0-9)**

This practicum is designed to provide the student with the opportunity to apply the nursing process in meeting the multiple health needs of individuals, families and groups. Emphasis is placed on the epidemiological approach to resolving complex health problems. Prerequisites: NURS 410 and 412. Corequisite: NURS 510. (F;S)



**NURS 512. Seminar in Health Care** **Credit 2(2-0)**  
This course focuses on transition into professional nursing. It is designed to study selected complex problems of adaptation across the life span. The nursing process is utilized to design the plan of care for clients with complex health problems requiring a variety of interventions. A theoretical framework for making ethical and legal decisions is presented. Prerequisites: NURS 410 and 412. (S)

**NURS-513. Complex Health Problems Across the Life Span Practice** **Credit 3(0-9)**  
This is a nursing practice course with emphasis on providing care to clients across the life span with complex problems of adaptation. Nursing care emphasis is on promoting adaptation. Learning experiences take place in a variety of settings. Prerequisites: NURS 410 and 412. (F;S;SS)

**NURS 516. Independent Study** **Credit (1-3, 0)**  
This course is designed to provide a unique experience that offers the generic or R.N. nursing student the opportunity for creatively meeting learning objectives within the framework of the nursing curriculum. The faculty function as resource persons and work with students to find creative and innovative means to facilitate learning. Prerequisite: NURS 350 and 351. (F;S)

**NURS 518. Integration and Application of Nursing Practice** **Credit 3(3-0)**  
This course is designed for seniors to provide a systematic review of essential content necessary for the successful integration and application of nursing knowledge required for entry into nursing practice. Test-taking skills, along with application of critical thinking skills, are incorporated throughout the course. Emphasis is placed on providing individual, as well as group instruction to strengthen areas of weakness and enhance areas of strength. Students practice self-evaluative skills and devise appropriate strategies based on outcomes from this evaluation process. Prerequisites: NURS 411 and 413. Corequisites: NURS 500 and 501, or NURS 510, 511, and 512. (S)

**NURS 520. Management & Leadership in Health Care Organizations** **Credit 2(2-0)**  
This course is designed to study leadership and management theories and concepts in nursing and organizational behavior. The application of these theories and concepts to nursing practice and managing human resources in health care organizations are discussed. Management of the health care team and groups of clients will be emphasized. Prerequisites: NURS 410 and 413. Corequisite: NURS 500 or 510. (F)

**NURS 524. Nursing Research** **Credit 2(2-0)**  
This course is an introduction to the research process. Emphasis is placed on problem solving utilizing the research process and application. Nursing research steps, terminology and goodness of fit for study types, purpose, designs, data analysis and appropriate nursing theory will be evaluated. Prerequisites: NURS 510 and 511. Corequisite: NURS 500, 510, 511, and 512. (F;S)

**NURS 606. HealthCare in an Aging Society** **Credit 3(3-0)**  
This course is intended to introduce the student to the principles of health care in an aging society. Students will be exposed to the concepts that are applicable to caring for the elderly as well as being introduced to various interdisciplinary agencies that work with the elderly to ensure a holistic approach to their care. (F;S)

**DIRECTORY OF FACULTY**

**Lewis Amendola** ..... **Assistant Professor**  
R.N., B.S.N., M.A., Northern Michigan University; B.A., Marquette University; M.S.N., California State University at Los Angeles; Ph.D., University of North Carolina at Greensboro



- Cathy Badgett** ..... **Clinical Instructor**  
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- Laura McQueen** ..... **Clinical Instructor**  
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- Dawn Murphy** ..... **Student Services, Director**  
B.S., M.S., North Carolina A&T State University
- E. Monica Ward Murray** ..... **Assistant Professor and Assistant to Dean for Research**  
R.N., SRN, Royal Berkshire Hospital; RMN, Broadmoor Hospital; B.S.N., Medger Evers College-CUNY; M.S., Ed.M., Ed.D., Teacher's College, Columbia University
- Donna Paulson** ..... **Clinical Assistant Professor**  
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- Patricia Price Lea** ..... **Associate Professor and Dean**  
R.N., C., B.S.N., Winston-Salem State University; M.S.N., University of North Carolina at Chapel Hill; M.S.Ed., North Carolina A&T State University; Ph.D., Wayne State University
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- Shiphrah, Williams-Evans** ..... **Associate Professor**  
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- Von Best Whitaker** ..... **Associate Professor, Assistant Dean**  
R.N., C., B.S., Columbia Union College; M.S., University of Maryland; M.A., Ph.D., University of North Carolina at Chapel Hill
- Sonja Wilson** ..... **Associate Professor**  
R.N., B.S.N., Winston-Salem State University; M.S.N., Hunter College; Ed.D., Teacher's College, Columbia University

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## The Center for Student Success

<http://www.ncat.edu/~tcss>

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**Rita T. Lamb, Director**

### OBJECTIVES

The Center for Student Success promotes the academic success of Undeclared students by providing academic support in an intellectual setting which delivers quality advising, facilitates choice of major and career direction, and promotes student satisfaction with, integration in, and adjustment to the university community. Additionally, this academic unit promotes the achievement of students in basic skills development and has significant involvement in the orientation of first-year students.

The objectives of The Center for Student Success are:

1. To reduce the rate of attrition among undeclared freshmen through curricula that promotes student academic adjustment to and integration into the University environment.
2. To provide developmental instruction in reading and mathematics.
3. To provide academic advisement for undeclared students that will assist them in qualifying for their prospective majors.
4. To provide academic support for students beyond regular class instruction.
5. To help new students benefit from and adjust to college life.

### COURSES WITH DESCRIPTION IN FRESHMAN STUDIES

#### **FRST 098. Basic Reading Skills**

**Credit 2**

This course covers basic instruction in word recognition, word meanings, comprehension, analogies, and the principles of logical order.

#### **MATH 099. Intermediate Mathematics**

**Credit 3**

This course provides elementary properties of real numbers and basic algebra through solving of quadratic equations by various means. Required of students whose mathematics SAT scores are low and whose major curriculum includes either MATH 101 or MATH 111.

#### **FRST 100. University Survival**

**Credit 1**

This course provides an introduction to the University environment for freshman students, study skills, career exploration, University policies and procedures, critical thinking and University support services.

### CREDIT

Credit is given for all courses taken in The Center for Student Success. However, no quality points are received for mathematics and reading courses toward the completion of a degree.

## DIRECTORY OF FACULTY

**Rose Alexander**, B.S., M.A., North Carolina A&T State University

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**Eugenia Toca-McDowell**, B.S., North Carolina A&T State University



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## **Department of Military Science (MISC)**

[www.ncat.edu/~rotc](http://www.ncat.edu/~rotc)

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**LTC Larry C. Burnett, Professor of Military Science**

### **OBJECTIVE**

The objective of the Army Reserve Officers' Training Corps (ROTC) is to train, motivate and prepare selected students with potential to serve as commissioned officers in the Regular Army, Army Reserve or the Army National Guard. The program is designed to provide an understanding of the fundamental concepts and principles of military art and science and to develop leadership and managerial potential in the student. A strong sense of personal integrity, honor, and individual responsibility, and an appreciation of the requirements for national security are instilled in all students. Attainment of these objectives will prepare students for commissioning and will establish a sound basis for their future professional development and effective performance in the Army or civilian life.

Enrollment in the Department of Military Science courses is open to all students attending a college or university in the Greater Greensboro Consortium (**Bennett College, Elon University, Greensboro College, Guilford College, High Point College, North Carolina A&T State University, and University of North Carolina at Greensboro**). The Army ROTC program offers elective courses for undergraduate and graduate students leading to a commission in the United States Army. Students may compete for four-year, three-year, and two-year scholarships. The program also offers nursing scholarships on a competitive basis as a Partnership in Nursing Education (PNE) school. For more information, contact the Army ROTC Department in Campbell Hall, 336-334-7588.

### **DEGREES OFFERED**

Leads towards a Commission in the United States Army, Army Reserves or the National Guard.

### **GENERAL PROGRAM REQUIREMENTS**

The ROTC program is divided into a basic course, which is normally taken during the freshman and sophomore years, and an advanced course, which is taken during the junior and senior years. The admission of students to the ROTC program is based upon the general admission requirements of the University as they pertain to a full-time student.

### **DEPARTMENT REQUIREMENTS**

The programs of instruction for Army ROTC include a four-year program and a two-year program. The four-year program consists of the two-year basic course, the two-year advanced course, and the National Advance Leadership Camp. The two-year program encompasses a Leaders Training Course, the two-year advanced course and the Advanced Summer Camp.

*Basic Course:* The basic course is designed to introduce the student to basic military concepts and the organization and mission of the U.S. Army. Those students who successfully complete this course are eligible to enter into the advanced course.

Credit for the basic course can be obtained by successfully completing Military Science 101, 102, 201, 202. A leadership laboratory must be taken concurrently each semester with

the class. Prior service in the Armed Forces can be used to obtain appropriate credit for the basic course.

*Advanced Course:* The advanced course is designed to produce officers for the active Army as well as the Reserve Components. Entry into the advanced course is on a best qualified basis. The student must possess qualifications for becoming an effective Army officer. Applicants must attain and maintain a minimum G.P.A. of 2.0, (scholarship applicants must have a 2.5 G.P.A. and after being awarded the scholarship, must maintain a 2.0 G.P.A.) in order to validate their academic eligibility for participation in the program. The applicants must have a minimum of two years of academic work remaining at the educational institution in a curriculum leading to either a baccalaureate or advanced degree in a recognized academic field of study. In addition, each student must successfully complete a National Advanced Leadership Camp of at least five weeks. Applicants must also pass an Army medical examination. The following courses are required for completion of the advanced course: Military Science 301 302, 401, 402. The leadership laboratory must also be taken each semester.

*Two Year Program:* This program is designed for sophomore and junior students transferring to a 4-year institution who have not taken ROTC. A basic six-week summer training period after the sophomore year takes the place of the basic course required of students in the traditional four-year program. When a student with two years of college has successfully completed the basic summer training, he is eligible for the advanced ROTC course in his junior and senior years. The advanced course, which leads to an officer commission, is the same for students in either the four-year program or the two-year program.

## **CAREER OPPORTUNITIES**

Successful completion of the ROTC program qualifies a student for a commission as a Second Lieutenant in one of the following branches of the Army: Adjutant General's Corps, Armor, Infantry, Military Police Corps, Ordnance Corps, Quartermaster Corps, Signal Corps, Medical Service Corps, Corps of Engineers, Finance Corps, Aviation, Field Artillery, Air Defence Artillery, Transportation Corps and Army Nurse Corps. Special requirements and/or additional training is required for commissioning in the Medical Corps, Army Medical Specialist Corps, Veterinarian Corps, and the Judge Advocate General's Corps.

## **FINANCIAL AID**

A subsistence fee ranging between \$250.00 and \$400.00 per month is paid to advanced course and scholarship cadets during the entire normal academic year while participating in Army ROTC. Four, three and two year scholarships are available. Details on scholarships are published by the Department of the Army and by the Military Science Department. In addition to the subsistence fee, the scholarship pays tuition, laboratory fees, book cost and certain supplies within the limits of the scholarship award.

## **COURSES WITH DESCRIPTION IN MILITARY SCIENCE**

### **MISC 101. Introduction to Citizen/Soldier**

**Credit 1**

An introduction to the mission, organization and history of the ROTC: Military and civilian obligation in relation to National Security; Individual Arms and Marksmanship Techniques, Emergency Medical Treatment. The students will receive information that will help them understand and prepare military correspondence (the Army Style of Writing). Leadership Laboratory training to include thorough indoctrination in military courtesy and customs of the service, drill experience, development of initiative and self-confidence. (F)

**MISC 102. Introduction to United States Military Forces in Support of National Defense**

**Credit 1**

A discussion of the mission and responsibilities of the United States Military Forces in support of National Security with emphasis on the role of the individual, participating citizen. Students will be introduced to Map Reading Techniques. Leadership Laboratory is a continuation of MS 101 Laboratory. (S)

**MISC 105/107. Leadership Laboratory \* 205/207**

**Credit 1**

Leadership Lab is in conjunction with each of the aforementioned M.S. level classes in the basic course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. Leadership Lab is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. (F) MISC 105/107; (S) 205/207

**MISC 201. Branches of the Army and Leadership Principles**

**Credit 1**

A detailed study of the applicability of leadership principles, traits, and techniques in all job areas. Additionally, an appreciation is developed for leadership counseling techniques. The organization of the Army culminates this course. (F)

**MISC 202. Map Reading Skill Development and Military Ethics**

**Credit 1**

A detailed study of orienteering to include basic fundamentals of map reading, grid systems, scale and distance, elevation and relief, military symbols, direction and location, and utilization of the declination diagram. Additionally, students will discuss the code of conduct, the principles of war and reinforce preparation of military correspondence. Leadership Lab oratory is a continuation of MS 201 Laboratory. (S)

**MISC 301. Introduction to Military Team Theory**

**Credit 3**

How to prepare and conduct military training, to include presentation and communication techniques. Included in this phase of instruction is a 10-minute oral presentation, how to cope with basic problems, i.e., discipline, motivation, encountered in small units, leadership training designed to further develop planning and organizational skills, fundamentals of offensive and defensive tactics, and principles of war. (F)

**MISC 302. Military Skill/Leadership Training**

**Credit 3**

A review of the principles and fundamentals of small unit tactics, and the application of the principles of offensive and defensive combat to units of the infantry battalion. Familiarization with characteristics, operation and employment of small unit weapons, communication systems and equipment, and continued development of selected Military Skills. Orientation relative to administrative procedures, required standards of performance, and general conduct of training at ROTC Advanced Summer Camp. Continuation of Leadership Laboratory Training conducted in MS 301. (S)

**MISC 305/307. Leadership Laboratory\* 405/407**

**Credit 1**

Leadership Lab is in conjunction with each of the aforementioned M.S. level classes in the advanced course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. Leadership Lab is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. (F) 305/307; (S) 405/407

**MISC 401. Seminars in Leadership and Professional Development**

**Credit 3**

Leadership management and professional development, a study of the U.S. Army Personnel Management System, methods of conducting Command and Staff and Unit meetings, how to prepare military correspondence, ethics and professionalism, military justice. (F)



**MISC 402. Advanced Military Team Theory and Active Duty** **Credit 3**  
Management simulation exercise and Active Duty orientation, small unit effectiveness and Army Training Management, the U.S. Army logistics system, interpersonal skills, counseling techniques, and personnel evaluation, the Law and Principles of War, Code of Conduct and Geneva Convention, customs and courtesies of an Army officer. (S)

**MISC 206. Leaders Training Course (Internship Program)** **Credit 4**  
This course consists of 6 weeks of training at Fort Knox, KY Training consists of Army History, Role and Mission, Map Reading/Land Navigation, Rifle Marksmanship, Basic Leadership Techniques, Physical Training/Marches, Individual and Unit Tactics, Communications,, First Aid, Drill, Parades and Ceremonies, Military Courtesy, and Traditions. This course also teaches the student the ability to think and perform under pressure. (Summer) (SS)

**MISC 306. National Advanced Leadership Camp (Internship)** **Credit 4**  
Normally taken the summer following the junior year. The training is conducted at designated. U.S. Army Installations. This training provides cadets with practical experience in leadership, Military Training, small unit tactics, weapons qualifications, and communications. This internship is six weeks in duration. (Summer) (SS)

**MISC 308. Nurse Summer Training Program (NTSP) (Internship)** **Credit 4**  
Normally taken the summer following junior year. The Nurse Summer Training Program is a voluntary, six-(6) week program for nurse cadets, which provides opportunities to develop and practice leadership skills in both field and clinical environments. The program's primary focus is to provide nurse cadets experiences utilizing military, leadership, clinical nursing, administrative, and interpersonal skills. Academic credit hours may be granted for NURS-513.

**MISC 406. Airborne Training+ (Internship)** **Credit 3**  
This course consists of 3 weeks of intensive airborne training to include physical conditioning, landing techniques, parachute safety, simulated jumps, procedure in and around aircraft, and five (5) combat jumps from Air Force aircraft flying at 1250 feet. (Summer) (SS)

**MISC 409. Cadet Troop Leader Training + (Internship)** **Credit 3**  
This course consists of three weeks training with an active duty Army unit. Students who participate are assigned to a unit and spend three weeks with a Second Lieutenant, Platoon Leader. The course is designed to familiarize students with the duties and responsibilities of Second Lieutenants in the Army. Students are assigned duties as Platoon Leaders and receive an evaluation at the end of training. The training is available to students enrolled in Military Science 300 level courses and is offered as part of the summer training program.

*\* Denotes subject that must be taken every semester.*

*+Optional training on a selected basis.*



## DIRECTORY OF FACULTY

- Joe D. Bookard, CPT, FA** ..... **Assistant Professor**  
B.S., South Carolina State University
- Larry C. Burnett, LTC, ADA** ..... **Professor**  
B.S., North Carolina A&T State University; M.S.A., Central Michigan University
- Raymond T. Hartman, MAJ** ..... **Assistant Professor**  
A.D., Atlantic Community College; B.A., Stockton State College; M.S. University of Central Texas
- Steven B. Hines, CPT, IN** ..... **Assistant Professor**  
B.S., North Carolina A&T State University
- Vallerie J. Pringle, MAJ, SC/AQ** ..... **Assistant Professor**  
B.S., Greensboro College; M.S., Golden Gate University; M.S., University of Indianapolis
- Tracie L. Smith, CPT, IN** ..... **Assistant Professor**  
B.S., Troy State University

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## **Department of Aerospace Studies**

<http://www.ncat.edu/~afrotc>

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**Lt. Col. Robert L. Rogers, Professor**

### **OBJECTIVES**

The objective of the Department of Aerospace Studies is to develop leaders who will serve as commissioned officers in the United States Air Force (USAF). To meet this objective, the department offers a four-year and a two-year Air Force Reserve Officer Training Corps (AFROTC) Program. Most students enroll in the 4-year program, which begins their freshman year through award of a bachelor's degree and commissioning into the USAF. The two-year program would begin with entry in the junior year.

The AFROTC Program begins with the General Military Course. As freshmen or sophomores, students normally attend a one-hour class and a two-hour Leadership Laboratory each week. The freshman course is a survey course designed to introduce students to the USAF and provides an overview of the basic characteristics, missions, and organization of the Air Force. The sophomore course is designed to examine the general aspects of air and space power through a historical perspective; utilizing this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of the Persian Gulf War. Students who compete favorably for the award of Professional Officer Corps (POC) status will attend a four-week summer Field Training Program, at one of three Air Force installations across the country, to give them a firsthand look at the Air Force environment.

During the junior and senior years, students begin and complete the POC Program, which is designed to equip them with the tools and strategies they will use on active duty. The junior year begins a study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required of a Second Lieutenant in the USAF. Seniors examine the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest in the senior curriculum focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Leadership Laboratory puts the knowledge obtained and skills developed in the classroom into practical application. Depending on classification (freshman through senior) and contractual obligation to the USAF, the qualified student will receive a monthly, non-taxable stipend of between \$250 and \$400.

When one successfully completes the AFROTC Program and receives a degree, he/she is then commissioned as a Second Lieutenant and serves a minimum of four years in the Air Force. Everyone enters the Air Force in a specific career field, usually correlating to their field of study, which is subject to the needs of the Air Force. There are many exciting career fields for active duty officers including Engineering, Medical, Legal, Nursing, Transportation and Logistics, and Aviation (i.e., pilot and navigator).

For more information on the AFROTC Program, you may contact any instructor or the Unit Admissions Officer in the Department of Aerospace Studies, Campbell Hall, telephone (336) 334-7707, or view the AFROTC/DET 605 Website at [www.ncat.edu/~afrotc](http://www.ncat.edu/~afrotc).

## PROGRAM REQUIREMENTS

The requirements for entry into either the four-year or two-year program are as follows:

- Must be a full-time student of NCA&TSU or Greensboro Consortium Institution
- Must be at least 14 years old to participate and at least 17 to receive a scholarship; if entering into the two-year program, must be at least 18 years old or have the consent of a legal guardian
- Must be physically qualified
- Must be a U.S. citizen
- Must pass the Air Force Officer Qualifying Test
- Must complete summer Field Training

Additional requirements for entering the two-year program include the following:

- Must have 2 academic years remaining (undergraduate, graduate, or combination)
- Must be able to complete all commissioning requirements in accordance with the following:

Non-Scholarship Recipients:	prior to turning 30 years old
Pilots & Navigator Candidates:	prior to turning 30 years old
Scholarship Recipients:	prior to turning 31 years old

## UNIFORMS

A deposit of twenty-five dollars (\$25) is required of all students prior to being issued a uniform. The fee will be refunded upon return of all uniform items issued. The uniform must be dry cleaned prior to returning it or a portion of the uniform deposit may be withheld. Each cadet is responsible for the maintenance and security of property they have been issued. All uniform items must be returned prior to the end of each academic year.

## SCHOLARSHIPS

Scholarships may be granted for periods of two, two and a half, three, three and a half, and four years. All scholarship students, depending on classification, receive a monthly tax-free stipend of between \$250 and \$400. The Air Force pays tuition, laboratory fees, and a book allowance. In addition, the university will provide free room and board for the first five four-year scholarship recipients. Details on scholarships may be obtained by contacting the Unit Admissions Officer in the Department of Aerospace Studies.

## GENERAL MILITARY COURSE

### **AERO 121. Foundations of the USAF**

**Credit 1(1-0)**

This course introduces the students to the USAF. It includes a study of the foundations of officership, mission and organization of the Air Force, US Military customs, courtesies, rank structure and Air Force Core Values. (F)

### **AERO 122. Foundations of the USAF II**

**Credit 1(1-0)**

This course is a continuation of AERO-121. Featured topics include Air Force organization and command structure, communication skills application and structure of the Department of Defense. (S)

**AERO 131. General Military Course Leadership Laboratory I** **Credit 0(0-1)**

This course puts into practice the Air Force customs and courtesies, drill and ceremonies, and leadership techniques learned during the associated class. This course must be taken in conjunction with AERO 121. (F)

**AERO 132. General Military Course Leadership Laboratory II** **Credit 0(0-1)**

This course is a continuation of AERO-131. This course puts into practice the Air Force customs and courtesies, drill and ceremonies, and leadership techniques learned during the associated class. Provides more detailed information about the Air Force and career opportunities available. Must be taken in conjunction with AERO 122. (S)

**AERO 221. Airpower History** **Credit 1(1-0)**

This course is designed to examine the general aspects of air and space power through a historical perspective. Historical examples are provided to extrapolate the development of Air Force capabilities and missions to demonstrate the evolution of what has become today's USAF air and space power. (F)

**AERO 222. Airpower History** **Credit 1(1-0)**

This course is a continuation of AERO-221 and further examines the aspects of air and space power through a historical perspective but incorporates most recent world events and how they pertain to the capabilities and missions of the USAF. (S)

**AERO 231. General Military Course Leadership Laboratory III** **Credit 0(0-1)**

This course is an application of Air Force customs and courtesies; drill and ceremonies; and examines the Air Force environment, life, and work of an Air Force Officer. Must be taken in conjunction with AERO 221. (F)

**AERO 232. General Military Course Leadership Laboratory IV** **Credit 0(0-1)**

This course continues the application of Air Force customs and courtesies, and leadership training. This course must be taken in conjunction with AERO 222. (S)

**PROFESSIONAL OFFICER COURSE**

**AERO 321. Leadership Studies I** **Credit 3(3-0)**

This course is a study of leadership, management fundamentals, and professional knowledge, leadership ethics, and communication skills required of a junior officer in the United States Air Force. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. (F)

**AERO 322. Leadership Studies II** **Credit 3(3-0)**

This course is a continuation of AERO-321. Studies of teambuilding fundamentals, roles and responsibilities of the Air Force supervisor, officer professional development, and advanced topics on Military Ethics and communication skills applications are covered. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical applications of the concepts being studied. (S)

**AERO 331. Professional Officer Course Leadership Laboratory I** **Credit 0(0-1)**

This course provides advanced leadership experiences in training and command activities. This gives the advanced students the opportunity to apply leadership and management principles and techniques. This course must be taken in conjunction with AERO-321. (F)

**AERO 332. Professional Officer Course Leadership Laboratory II** **Credit 0(0-1)**

This course is a continuation of AERO-331. It gives students an opportunity to develop personal leadership and management concepts through participation in advanced leadership experiences. This course must be taken in conjunction with AERO-322. (S)



**AERO 421. National Security Affairs****Credit 3(3-0)**

This course examines the national security process, regional studies, and Air Force doctrine. Within this structure, continued emphasis is given to refining communication skills. (F)

**AERO 422. National Security Affairs****Credit 3(3-0)**

This course focuses on officership, military justice, civilian control of the military, preparation for active duty and military professionalism. (S)

**AERO 431. Professional Officer Course Leadership Laboratory III****Credit 0(0-1)**

This course is designed to develop each student's leadership potential and serve as an orientation to active duty. Students are involved in the planning, organizing, coordinating, directing, and controlling of military activities in the cadet corps. This course must be taken in conjunction with AERO-421. (F)

**AERO 432. Professional Officer Course Leadership Laboratory IV****Credit 0(0-1)**

This course is a continuation of AERO-431. It provides the students with practical command and staff leadership experiences through their performance of various tasks within the framework of an organized cadet corps. This course must be taken in conjunction with AERO 422. (S)

CURRICULUM GUIDE FOR AIR FORCE RESERVE OFFICER TRAINING  
CORPS CADETS

General Military Course

FRESHMAN YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 121	1	AERO 122	1
AERO 131	<u>0</u>	AERO 132	<u>0</u>
	1		1

SOPHOMORE YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 221	1	AERO 222	1
AERO 231	<u>0</u>	AERO 232	<u>0</u>
	1		1

Professional Officer Course

JUNIOR YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 321	3	AERO 322	3
AERO 331	<u>0</u>	AERO 332	<u>0</u>
	3		3

SENIOR YEAR

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 421	3	AERO 422	3
AERO 431	<u>0</u>	AERO 432	<u>0</u>
	3		3

\* AERO 421 and 422 may be used to fulfill the University's global studies requirement.

DIRECTORY OF FACULTY

<b>Lt. Col. Robert L. Rogers</b> .....	<b>Professor</b>
B.S., North Carolina A&T State University; M.S., Western New England College	
<b>Capt. Gordan A. Pearson</b> .....	<b>Assistant Professor</b>
B.S., Jackson State University	
<b>Capt. Angela F. Hunter</b> .....	<b>Assistant Professor</b>
B.A., University of Louisville; M.A., Webster University	

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## WASTE MANAGEMENT INSTITUTE

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### **Godfrey A. Uzochukwu, Director**

The Waste Management Institute (WMI) coordinates the interdisciplinary environmental and waste management efforts of the University in the areas of instruction, research, and community outreach. The approach to environmental and waste management education at the University rests upon a solid foundation of applied and social sciences, engineering, technology, and law/policy. The following academic units are involved in environmental and waste management activities: Animal Science, Agricultural Education, Agricultural Economics, Architectural Engineering, Biology; Business Administration, Chemical Engineering, Civil Engineering, Computer Science, Curriculum and Instruction, Construction Management and Safety, Economics, Electrical Engineering, History, Human Environment and Family Science, Industrial Engineering, Mathematics, Mechanical Engineering, Natural Resources, Nursing, Physics, Psychology, Sociology/Social Work, and Speech/Communications.

Additionally, the Waste Management Institute administers an Undergraduate Certificate Program. Interested students are required to complete 18-20 hours of approved environmental and waste management courses. The Waste Management Certificate Program complements the student's academic major and highlights the training of students in waste management and environmental security. The Certificate is awarded with the undergraduate degree at a special ceremony.

### **REQUIREMENTS FOR THE WASTE MANAGEMENT CERTIFICATE (18-20) CREDIT HOURS:**

EASC 201; EASC 444; EASC 622; EASC 699; AREN 221; AREN 573; CIEN 310; CIEN 311; CMN 410; CIEN 416; CIEN 610; CHEN 618; INEN 664; PHYS 407; HIST 307; CHEM 641; LDAR 203; CROS 603; HEFS 643; ANSC 637; LASC 462; CM 593; OSH 311; OSH 312; OSH 411; OSH 413; OSH 414; OSH 415; OSH 416; OSH 515; OSH 516; OSH 517; AGED 607; ENVIRONMENTAL INTERNSHIP AND SPECIAL TOPIC/PROBLEM COURSES; ENGINEERING DESIGN COURSES; CONSORTIUM COURSES IN LAW/POLICY THAT ARE RELATED TO ENVIRONMENTAL AND WASTE MANAGEMENT. A comprehensive list of courses is published and distributed to academic departments every semester. Note that the above courses do not include prerequisites and must be approved by Academic Advisors and the Director of Waste Management Institute. The Waste Management Institute is located in the Carver Hall Annex.

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## THE GRADUATE SCHOOL

<http://www.ncat.edu/~gradsch/>

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**Kenneth H. Murray**

**Associate Vice Chancellor for Academic Affairs and Interim Graduate Dean**

Graduate education at North Carolina Agricultural and Technical State University was authorized by the North Carolina State Legislature in 1939. The authorization provided for graduate training in agriculture, applied science and allied areas of study. An extension of the graduate program, approved by the General Assembly of North Carolina in 1957, provided for enlargement of the program to include teacher education as well as such other programs of a professional or occupational nature as might be approved by the State Board of Higher Education.

### OBJECTIVES

The School of Graduate Studies at North Carolina Agricultural and Technical State University offers advanced study for qualified individuals who wish to improve their competence for careers in many professions. Such study of information and techniques is provided through programs leading to the master and doctoral degrees and through institutes, workshops, and individual courses designed for those who are not candidates for a higher degree but who desire advanced work in certain fields of study. The School of Graduate Studies provides through its master level programs the foundation of knowledge and of techniques required for those who wish to continue their education in doctoral programs at other institutions. The School of Graduate Studies assumes the responsibility of stimulating and encouraging scholarly research among students and faculty members.

It is expected that, in the course of their studies, graduate students (1) will have acquired special competence in at least one field of knowledge; (2) will have developed further their ability to think independently and constructively; and (3) will have developed and demonstrated the ability to collect, organize, evaluate, and report data which will enable them to make a contribution in their field of study.

### DEGREES GRANTED

The School of Graduate Studies at North Carolina A&T State University offers the following degrees:

#### **DOCTOR OF PHILOSOPHY (Ph.D.)**

1. Electrical Engineering
2. Industrial Engineering
3. Mechanical Engineering
4. Industrial Management (*Consortium Degree Program w/ University of Indiana*)

#### **MASTER OF ARTS (M.A.)**

##### **College of Arts and Sciences**

English and African American Literature

#### **MASTER IN SCHOOL ADMINISTRATION (M.S.A.)**

##### **School of Education**

Elementary Education, General



## **MASTER OF ART IN EDUCATION (M.S.A.)**

### **School of Education**

School Administration

## **MASTER OF SCIENCE (M.S.)**

### **School of Agriculture and Environmental Sciences**

1. Agribusiness, Applied Economics and Agriscience Education
  - a. Agricultural Economics
  - b. Agricultural Education
2. Animal Health Science
3. Food and Nutritional Science
4. Plant and Soil Science

### **College of Arts and Sciences**

1. Biology
2. Biology, Secondary Education
3. Chemistry
4. Chemistry, Secondary Education
5. English, Secondary Education
6. History, Secondary Education
7. Mathematics, Applied
8. Mathematics, Secondary Education
9. Physics

### **School of Education**

1. Adult Education
2. Counselor Education
3. Health and Physical Education and Recreation
4. Human Resources (Agency Counseling)
5. Human Resources (Business and Industry)
6. Instructional Technology

### **College of Engineering**

1. Architectural, Civil and Environmental Engineering
2. Chemical Engineering
3. Computer Science
4. Electrical and Computer Engineering
5. Industrial and Systems Engineering
6. Mechanical Engineering

## **School of Technology**

1. Industrial Technology, Manufacturing Systems
  - a. Electronics and Computer Technology
  - b. Construction Management
  - c. Graphic Communication Systems
  - d. Occupational Safety and Health
2. Technology Education
3. Vocational Industrial Education

## **MASTER OF SCIENCE IN MANAGEMENT (M.S.M.)**

### **School of Business and Economics**

1. Human Resources Management
2. Management Information Systems
3. Transportation and Business Logistics

## **MASTER OF SOCIAL WORK**

### **College of Arts and Sciences**

Social Work (*joint with UNCG*)

## **ADMISSION TO GRADUATE SCHOOL**

### **ADMISSION TO MASTER'S DEGREE PROGRAMS**

Applicants to a master's degree program must have earned a bachelor's degree from a four-year accredited college. Application forms must be submitted to the Graduate Studies Office with two official transcripts of previous undergraduate and graduate studies, and three letters of recommendation. Applicants may be admitted to graduate studies unconditionally, provisionally, or as a postbaccalaureate (PBS) non-degree seeking student. Applicants are admitted without discrimination because of race, color, creed, or gender.

### **UNCONDITIONAL ADMISSION**

To qualify for unconditional admission to a master's degree program for graduate study, an applicant must have earned an over-all average of 2.6 on a 4 point system (or 1.6 on a 3 point system) in his/her undergraduate studies. Some programs require a 3.0 grade point average on a 4.0 scale; therefore, applicants should check appropriate sections of the *Graduate Catalog* to ascertain the minimum grade point average required. In addition, a student seeking a degree in Agricultural Education, Elementary Education, Technology Education, or Secondary Education must possess, or be qualified to possess, a Class A Teaching License in the area of concentration. A student seeking a degree with a concentration in Guidance must possess, or be qualified to possess, a Class A Teaching License.

### **PROVISIONAL ADMISSION**

An applicant may be admitted to the master's degree program for graduate study on a provisional basis if (1) the earned baccalaureate degree is from a non-accredited institution or (2) the record of undergraduate preparation reveals deficiencies that can be removed near the beginning of graduate study. A student admitted provisionally may be required to pass examinations to demonstrate knowledge in specified areas, to take specified undergraduate

courses to improve his/her background, or to demonstrate competence for graduate work by earning no grades below “B” in the first nine hours of graduate work at this institution.

### **POSTBACCALAUREATE (PBS)**

Students not seeking a to be admitted to a graduate program at A&T may be allowed to take courses for self-improvement or for renewal of a teaching certificate if said students meet standard School of Graduate Studies entrance requirements. If a student subsequently wishes to pursue a degree program, he/she must complete the full admission process. The School of Graduate Studies reserves the right to refuse to accept towards a degree program credits which the candidate earned while enrolled as a PBS student; in no circumstances may the student apply towards a degree program more than twelve semester hours earned as a PBS student.

### **ADMISSION TO DOCTORAL PROGRAMS**

Applicants to the doctoral programs in Electrical and Computer Engineering, Industrial and Systems Engineering and Mechanical Engineering must submit completed application forms with two official transcripts of previous undergraduate and graduate studies. Other admission criteria are outlined below under the following headings: unconditional admission and provisional admission.

#### **UNCONDITIONAL ADMISSION**

Unconditional admission is offered to applicants who satisfy all general School of Graduate Studies requirements. In addition, they must have an earned Bachelor of Science and Master of Science degree in the appropriate discipline and a 3.5 grade point average in their Master of Science program. Graduate Record Examination scores are required. Test of English as a Foreign Language (TOEFL) is required for international students.

#### **PROVISIONAL ADMISSION**

Provisional admission is offered to applicants who meet all conditions except the 3.5 grade point average in the Master of Science degree. Provisional students must convert to unconditional admission on a timely basis by achieving a 3.5 average on graduate coursework when the ninth credit is completed.

### **JOINT DOCTORAL PROGRAM WITH INDIANA STATE UNIVERSITY**

Additionally, North Carolina A&T State University School of Technology and Indiana State University School of Technology offers jointly a doctor of philosophy consortium degree program in Technology. The specializations, program requirements, and admissions requirements are listed below.

#### **Specializations are:**

- Construction Management
- Digital Communications
- Human Resource Development and Training
- Manufacturing Systems
- Quality Systems

## PROGRAM REQUIREMENT

The Ph. D. in Technology Management consists of a minimum of 90 hours of course work and research at the post baccalaureate level. Included is course work in a general technology core, a research core, a technical specialization, an internship, a residency requirement, and a dissertation.

## ADMISSION REQUIREMENTS

Admission to the program is based on students meeting the following standards. The qualitative standards identified below reflect the minimum necessary for admission but does not ensure admittance.

- Bachelor's degree from an accredited university with a minimum undergraduate grade point average of 3.0 on a 4.0 scale.
- Minimum graduate grade point average of 3.5 on a 4.0 scale.
- Graduate Record Examination minimum scores of 500 on the verbal, quantitative, and analytical general tests.
- Five letters of recommendation.
- Employer validation of 2000 hours of occupational experience related to a technical specialization.
- Written statement including reasons for selecting the program, specialization, and goals upon graduation.
- Completion and mailing of application to the School of Graduate Studies, Indiana State University or completion of the application on-line at: [www.indstate.edu/grad/applications.html](http://www.indstate.edu/grad/applications.html).

## DIRECTORY OF FACULTY – F.D. BLUFORD LIBRARY

### Library Faculty

<b>John Akonful</b> .....	<b>Assistant Professor</b>
B.A., Johnson C. Smith University; M.S.L.S., Atlanta University	
<b>Arneice Bowen</b> .....	<b>Associate Professor</b>
B.A., Meredith College; M.L.S., North Carolina Central University	
<b>Donald Bradsher</b> .....	<b>Assistant Professor</b>
B.A., Shaw University; M.L.S., North Carolina Central University	
<b>Waltrene Canada</b> .....	<b>Associate Professor</b>
B.S., North Carolina A&T State University; M.L.S., North Carolina Central University	
<b>Nina Exner</b> .....	<b>Assistant Professor</b>
B.S., University of North Carolina at Chapel Hill, M.L.S., North Carolina Central University	
<b>Rebecca Floyd</b> .....	<b>Assistant Professor</b>
B.A., M.S.L.S., University of North Carolina at Chapel Hill	
<b>Inez Lyons</b> .....	<b>Assistant Professor</b>
B.S., North Carolina A&T State University; M.L.S., North Carolina Central University	
<b>Jacquelyn McGirt</b> .....	<b>Assistant Professor</b>
B.S., Bennett College; M.S.L.S., Atlanta University	



<b>Doris Mitchell</b> .....	<b>Associate Professor</b>
B.S., Alabama A&M University; M.S.L.S., Rutgers University	
<b>Euthena Newman</b> .....	<b>Associate Professor</b>
B.A., South Carolina State College; M.L.S., University of North Carolina at Greensboro	
<b>Gloria Pitts</b> .....	<b>Assistant Professor</b>
B.A., Howard University; M.L.S., University of North Carolina at Greensboro	
<b>John Teleha</b> .....	<b>Assistant Professor</b>
B.S., Case Western Reserve University; M.S.L.S., Kent State University	
<b>Jean F. Williams</b> .....	<b>Assistant Professor</b>
B.S., North Carolina Central University; M.S.L.S., Atlanta University	

## INDEX

### A

Academic Degree Programs, 13  
Academic Dishonesty Policy, 82  
Academic Dismissal Appeals, 73  
Academic Good Standing, 72  
Academic Information and Regulations, 66  
Academic Probation/Suspension, 72  
Academic Warning, 72  
Access to Student Records, 80  
Accounting, Department of, 325  
Accreditations and Institutional  
    Membership, 10  
Administration, Officers of, 6  
Admissions, 58  
Admission, Freshman, 59  
Admission, Graduate School, 63  
Admission, International Students, 61  
Admission, Policy, 58  
Admission Procedures, 58  
Admission, Special Students, 61  
Admission, Transfer, 60  
Advanced Placement, 66  
Aerospace Studies, Department of, 534  
Aggie C-Store, 23  
AggieONEcard, 23  
Agricultural & Biosystems Engineering, 447  
Agricultural and Extension Education, 88  
Agribusiness, Applied Economics and  
    Agriscience Education, Department of, 88  
Agriculture and Environmental, School of, 85  
Animal Sciences, Department of, 101  
Architectural Engineering, Program, 447  
Arts and Sciences, College of, 146  
Audit of Courses, 42  
Auditors, 68  
Auxiliary Services, 22

### B

Bioenvironmental Engineering, Program, 447  
Biology, Department of, 149  
Board of Trustees, 6  
Bookstore, 22  
Buildings, University, 8  
Business Administration, Department of, 330  
Business and Economics, School of, 322  
Business Education, Department of, 341

### C

Calendar, VI-XIII  
Career Services, Office of, 34  
Cell Phone Policy, 84  
Center for Distance Learning, The, 18  
Center for Student Success, The, 21, 527  
Change of Grade, 74  
Change of Name and Address, 81  
Changes in Schedule, 75  
Changing Schools/Colleges, 75  
Chemical Engineering, Program, 495  
Chemistry, Department of, 160  
Civil Engineering, Program, 447  
Class Attendance Policy, 77  
Class Room and Laboratory Buildings, 9  
Classification of Students, 74  
Commencement Participation, 79  
Computer Science, Department of, 471  
Computer Use Policy, 33  
Construction Management and Safety,  
    Department of, 400  
Continuing Studies and Summer Sessions,  
    Office of, 17  
Cooperative Education, 34  
Core Requirements of the University, 69  
Counseling Services, 23  
Course Credit By Examination, 71  
Course Load, 68  
Course Number and Classification, 74  
Course Scheduling, 74  
Courses of Study, 68  
Curriculum and Instruction,  
    Department of, 372

### D

Dairy Science, 106  
Declaration of Major, 68  
Development and University Relations,  
    Division of, 21  
Disability Support Services, 34  
Disruptive Behavior in the Classroom, 83  
Double Major, 69  
Drug and Alcohol Education Policy, 26

### E

Earth and Environmental Science, 130  
Economics and Transportation/Logistics,  
    Department of, 353

- Education, School of, 364
- Educational Support Centers, 17
- Electrical and Computer Engineering,
  - Department of, 479
- Electronics and Computer Technology,
  - Department of, 410
- Engineering, Agricultural and Biosystems,
  - Program in, 134
- Engineering, Architectural, Program in, 447
- Engineering, Chemical, 495
- Engineering, Civil and Environmental,
  - Program in, 447
- Engineering, Civil, Architectural,
  - Agricultural, 447
  - and Environmental, Department of,
- Engineering, College of, 439
- Engineering, Electrical and Computer,
  - Department of, 479
- Engineering, Industrial and Systems,
  - Department of, 488
- Engineering, Mechanical, Department of, 495
- English, Department of, 171

## F

- Facilities, 8
- Faculty, F. D. Bluford Library,
  - Directory of, 544
- Fees; Required Fees, Deposits and Charges, 40
- Fees, Veterans, 62
- Ferdinand D. Bluford Library, 17
- Financial Information, 39
- Five Year Readmission Policy, 76
- Food Services, 31
- Foreign Languages, Department of, 180
- French, 182

## G

- General Information, 1
- General Military, 535
- General Requirements for Graduation, 78
- Geography, 206
- German, 189
- Governance of North Carolina Agricultural and Technical State University, 5
- Governors, Board of, 5
- Grade Appeal, 74
- Grade Point Average, 74
- Grade Reports, 80

- Grading System, 71
- Graduate School, The, 540
- Graduating with Honors, 79
- Graduation Under Given Catalogue, 79
- Graphic Communication Systems and Technological Studies, Department of, 417

## H

- Health, Physical Education and Recreation,
  - Department of, 385
- Health Services, 25
- Historical Statement, 1
- History, Department of, 193
- Honor Roll, 76
- Honors Program, The, 12
- Horticulture Design, 133
- Housing and Residence Life, 31
- Human Environment and Family Sciences,
  - Department of, 109

## I

- Incidental Fees, Deposits, and Charges, 42
- Incompletes, 76
- Indebtedness to the University, 81
- Industrial and Systems Engineering,
  - Department of, 479
- Information Technology Services, 18
- Institutional Membership, 10
- International Programs, Office of
- International Students and Scholars,
  - Office of, 37
- Intra-departmental courses, 254

## J

- Journalism and Mass Communication,
  - Department of, 257

## L

- Laboratory Animal Science, 104
- Landscape Architecture, 135
- Late Registration, 68
- Library, 17
- Literature, 177
- Location of the University, 8

## M

- Manufacturing Systems, Department of, 433
- Mathematics, Department of, 209
- Mechanical Engineering, Program, 495
- Memberships, Institutional, 10

Memorial Union, 31  
 Military Science, Department of, 529  
 Minority Student Affairs, 36  
 Mission, Purpose and Goals of the  
   University, 2  
 Music Applied, 292  
 Music Program, 280  
 Music Education, 289  
 Music Percussions, 294  
 Music Performance Organization, 290  
 Music Piano, 293  
 Music Theory, 286  
 Music Voice, 293  
 Music Wind Instruments, 295

**N**

Natural Resources and Environmental Design,  
   Department of, 129  
 Nondiscrimination Policy, 3  
 Normal Credit Load, 71  
 Nursing, School of, 514

**O**

Officers of Administration, 6  
 Officers of Administration of the University  
   of North Carolina, 5  
 Official Registration, 68  
 Organization of the University, 5  
 Organizations and Activities, Student, 32

**P**

Physical Education, Health and Recreation,  
   Department of, 385  
 Physical Plant, 8  
 Physics, Department of, 222  
 Plan to Improve Graduation Rates, 81  
 Policy Governing Programs and Course  
   Offerings, 3  
 Policy on Make-up of Required Course  
   Work, 77  
 Political Science and Criminal Justice,  
   Department of, 231  
 Poultry Science, 106  
 Prerequisites, 69  
 Privacy of Student Records, 80  
 Professional Officer Course, 536  
 Psychology, Department of, 241  
 Purposes, Mission and Goals, 2

**Q**

Quality Points, 74

**R**

Re-Admission of Former Students, 75  
 Recreation Administration, 395  
 Refund and Repayment for Withdrawals, 43  
 Registration, 68  
 Registration for Thesis Courses, 42  
 Regular Session Charges for Part-Time  
   Students, North Carolina Student Rates, 41  
 Repetition of Courses, 69  
 Required Deposits, Charges and, Fees, 40  
 Research, Division of, 22  
 Residence Status for Tuition Purposes, 63  
 Rooms Reservation Deposit, 40  
 Russian, 190

**S**

Second Baccalaureate Degree, 79  
 Semester Examinations, 76  
 Service Buildings, 9  
 Social Work, 246  
 Sociology and Social Work,  
   Department of, 246  
 Soil Science, 132  
 Spanish, 188  
 Special Education Curriculum, 375  
 Special Fees and Deposits, 39  
 Special Notice to Veterans, 39  
 Special Students, 61  
 Student Appeals on Academic Dishonesty, 83  
 Student Conduct, 33  
 Student Development Services, 24  
 Student Financial Aid, 48  
 Student Life, 24  
 Student Organizations and Activities, 32  
 Students, Transfer, 60  
 Study Abroad, 12  
 Summer School Charges Per Credit Hour, 45  
 Summer Sessions and Outreach, Office of, 17

**T**

Teacher Education, Admission and Retention  
   Standards, 369  
 Teacher Education, Program of, 365  
 Technology, School of, 398



Theatre Arts Program, 301  
Ticket Office, 23  
Transcripts of Records, 81  
Transcripts, Obtaining, 81  
Transportation Institute, 353  
Trustees, Board of, 6  
Tuition and Fees, 39  
Twenty-Five Percent Tuition Surcharge, 40

## U

University Buildings, 8  
University of North Carolina, 3

## V

Veteran Affairs, 33  
Veterans and Persons Eligible for Veterans  
Benefits, 73  
Visual Arts Program, 314  
Visual and Performing Arts,  
Department of, 280

## W

Waste Management Institute, 21, 539  
Wind Instruments, 295  
Withdrawal From Courses, 44  
Withdrawal From the University, 75















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